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1. REPORT DATE **2007**	2. REPORT TYPE	3. DATES COVERED **00-00-2007 to 00-00-2007**

4. TITLE AND SUBTITLE **Alignment of Department of Defense Manpower, Resources, and Personnel Systems**	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Rand Corporation,National Defense Research Institute,PO Box 2138,Santa Monica,CA,90407-2138**	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**67**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

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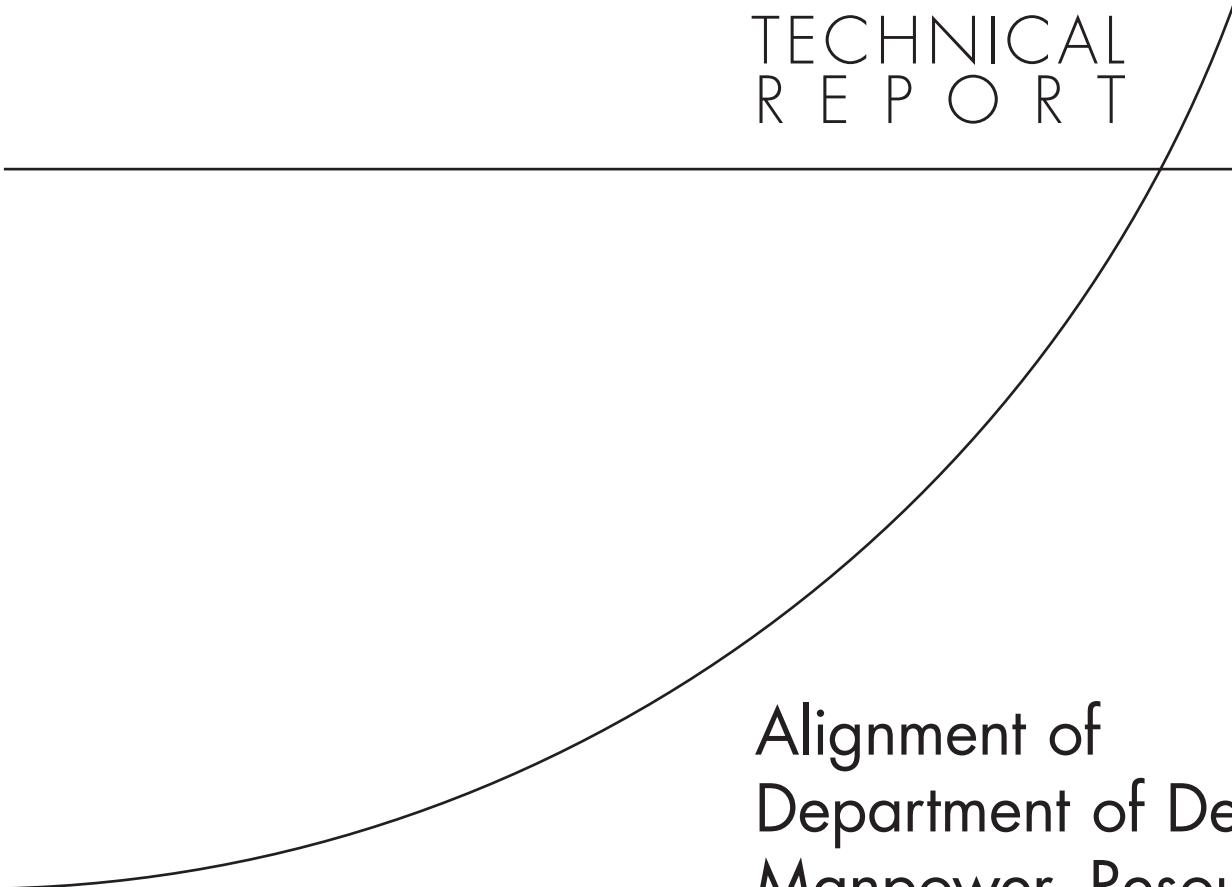
Alignment of Department of Defense Manpower, Resources, and Personnel Systems

Harry J. Thie, Roland J. Yardley, Margaret C. Harrell, Kevin Brancato

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Preface

An issue of concern to senior personnel managers in the Department of Defense is whether the manpower, resources, and personnel systems ever fail to align to provide the personnel inventory needed to meet readiness and operational requirements. The concern stems from the fact that if these systems do fail to align properly, readiness will be reduced, to the detriment of mission accomplishment. The RAND Corporation was asked to explore this issue; the ensuing analysis was conducted in the context of the ongoing U.S. defense transformation and the desire for improved system performance. The initial phases of the research were conducted during fiscal year 2004 and briefed to the sponsor in September 2004. This report is being published now for archival reasons.

This report should be of interest to those concerned with military organization, manpower, and personnel. It assumes some knowledge of the terminology and concepts associated with manpower, resources, and personnel.

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Background and Methodology

This report addresses the alignment of the manpower, resources, and personnel systems. The first of these, the manpower system, determines the needs of various organizations for military persons who have different characteristics. The resources system determines how many of those individuals will be paid for and pays for them. The personnel system enters, manages, develops, and exits personnel. Alignment occurs when organization and system information is shared in a manner that facilitates mission accomplishment.

This research was initiated to explore the assumption within the personnel community that disconnects, or misalignments, among these three systems are responsible for organizations being mismanned or undermanned. The analysis we carried out was designed to determine whether the systems were misaligned, assess how the systems synchronize if misalignments occur, and identify policies and programs to implement improvements.

We used service and Defense Manpower Data Center requirements, authorizations, and inventory data to analyze the alignment among the systems that provide personnel to organizations at particular times and over longer periods. Case studies were used to understand how misalignments occur and how they are eventually adjudicated or, if not adjudicated, what the consequences are. We also relied on theory and models of systems with inputs and outputs to understand complex relationships.

An Explanation of System Issues

A system, in its simplest form, takes in inputs and transforms them to create outputs. The manpower and resources systems produce outputs that are inputs to the personnel system.

These three systems—the manpower, resources, and personnel systems—are all complex and decentralized, meaning that system decisions and activities are interdependent, and control, authority, and decisionmaking are diffuse. The situation is complicated further by the fact that the personnel system is a system of systems (it includes such subsystems as accessing, training, experiencing, promoting, retaining, assigning, and separating) and has a relatively closed nature. This means that the personnel system takes a relatively long time to develop some kinds of personnel (e.g., a non-commissioned officer, an experienced pilot). Nonetheless, the three systems appear reasonably aligned in terms of system and organization interoperability.

This is not to say there are no frictions in the alignment of the systems. There are, and they include management and decision systems that affect the match between kind of person needed, funding of that need, and development of that kind of person. And various changes—for example, in the economy, in technology, in force structure, and in the mix between the active and reserve components—each have a non-routine effect. Time is an additional variable given that even though the systems and subsystems have time-phased interactions, the various changes do not always occur at optimal times.

Data Analysis

This research explored the frequency and magnitude of changes to authorizations using the Army as an exemplar. We examined annual changes in authorizations across certain occupations in the Army using the Army's WebTaads database and the Defense Manpower Data Center's Forces and Resources Manpower Information System (FORMIS) database. Misalignments were evident at points in time, but it was not clear that they were systemic rather than transitory and frictional.

Studies have consistently shown problems in filling all manpower spaces accurately. One such study[1] identifies 73 occupations as hard to fill within the active and reserve components of the military services. That study also cites another study, by the Congressional Budget Office, as asserting that on average, from fiscal year 1999 through fiscal year 2004, about 30 percent of the occupations for enlisted personnel experienced shortages, and about 40 percent experienced overages. It appears from our research that these observations refer more to either systemic or frictional issues within and among the personnel subsystems than to problems among the manpower, resources, and personnel systems.

Our examination found a very large number of changes within the Army at the occupational and grade levels. However, most of the changes were very small in number (i.e., less than one percent of authorizations for people) and seem to have had no practical effect on the response of the personnel system. Indeed, our initial data review indicated that there were no significant systemic problems. We hypothesized that larger problems could occur in certain cases, such as when there were great numbers of authorization changes for higher grades in smaller occupations. However, the inability to react quickly to a need for senior people in small occupations does not stem from system misalignment but, instead, from the inflexibility created by the military personnel system's closed nature (e.g., the lead time needed to achieve the defined skill level). The military personnel system is closed in that most entries are at the lowest grade and progression to higher grades is based on performance and time spent within the system.

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[1]   Derek B. Stewart, *Military Personnel: Preliminary Observations on Recruiting and Retention Issues Within the U.S. Armed Forces*, GAO-05-419T, Government Accountability Office (formerly the General Accounting Office), March 16, 2005.

Case Studies: Army Stryker Brigade and U.S. Northern Command

Our research considered two instances of perceived larger-scale system misalignments: the conversion to the first Army Stryker brigade and the stand-up of the U.S. Northern Command (NORTHCOM) after 9/11.

The Stryker case had the potential for significant problems because the brigade's managerial structure was completely reorganized in the transformation from teams based on armor and light infantry to teams based on medium-weight vehicles. However, the data available did not provide evidence of a misalignment between manpower and other systems during the stand-up of the first Stryker brigade. This means not that there were no difficulties during the Stryker brigade's initiation, but that the compact timeline was accommodated.

The stand-up of NORTHCOM and the resourcing of the needed military and civilian manpower constituted a unique occurrence guided by a unique process, one that involved the collaboration of the services, combatant commanders, defense agencies, and others. The billets needed for NORTHCOM came from within other joint activities and included military-to-civilian conversions of some positions. This process was guided by stated assumptions, such as that there would be no increase in military end strength and that service contributions to joint military manpower growth would be minimized. There were also considerable challenges, including the fact that there were many different stakeholders in the process. Despite all challenges, NORTHCOM's deadline for initial operational capability was met, as was its deadline for full operational capability. NORTHCOM was stood-up off line from the usual system's processes, and some Joint Staff officials were of the opinion that NORTHCOM was a once-in-a-lifetime stand-up. Nonetheless, the NORTHCOM case demonstrates that the ability to step off line for extreme circumstances does exist and that such cases are not constrained by the manpower, resources, and personnel systems. Furthermore, there is no evidence from this case that the NORTHCOM stand-up was faulted or hampered by systemic disconnects among the manpower, resources, and personnel systems.

Conclusions and Observations

Alignment is not about whether the individual systems of manpower, resources, and personnel are effective or efficient, but about whether they interoperate effectively. In short, they do. The key variable driving whether a change is or is not disruptive appears to be time. Short-notice changes might appear chaotic in an overall system designed for regularity. Given sufficient time, however, the three systems appear to align.

Organizational changes are always disruptive, especially in large, complex organizations. Nonetheless, the procedures in place appear to display relatively little friction. The results of our analysis are contrary to the original assumption that the manpower, resources, and personnel systems are systemically misaligned. What we found is that at the military-service level, these three systems are better aligned than is generally recognized.

However, even though the three systems appear to be functionally aligned, two improvements apply: Changes within the subsystems of the personnel system could lead to better effec-

tiveness and efficiency, and additional flexibility in the personnel system could reduce the cycle time needed to meet manpower authorizations.

Acknowledgments

Abbreviations

AF	Air Force
BCP	Budget Change Proposal
CBO	Congressional Budget Office
CIS	Comptroller Information System
CJCS	Chairman of the Joint Chiefs of Staff
CMF	Career Management Field
COA	course of action
CONUS	Continental United States
DFAS	Defense Finance and Accounting Service
DIMHRS	Defense Integrated Military Human Resource System
DoD	Department of Defense
DODAF	Department of Defense Architecture Framework
EA	Executive Agent
FOC	full operational capability
FORMIS	Forces and Resources Manpower Information System
FTE	full-time equivalent
FY	fiscal year
FYDP	Future Years Defense Program
GAO	Government Accountability Office (formerly General Accounting Office)
GWOT	Global War on Terror
HSI	Human Systems Integration

IOC	initial operational capability
JCIDS	Joint Capabilities Integration and Development System
JFCOM	U.S. Joint Forces Command
JMP	Joint Manpower Program
JS	Joint Staff
JTD	Joint Table of Distribution
JTF GTMO	Joint Task Force Guantanamo (Bay)
MCTFS	Marine Corps Total Force System
MDEP	Management Decision Package
MHA	Major Headquarters Activities
MOC	military occupation
NDAA	National Defense Authorization Act
NORTHCOM	U.S. Northern Command
OUSD (P&R)	Under Secretary of Defense for Personnel and Readiness
OSD	Office of the Secretary of Defense
PBD	program budget decision
PEC	program element code
PEG	Program Evaluation Group
PPBES	Planning, Programming, Budgeting, and Execution System
SJFHQ	Standing Joint Forces Headquarters
SPACECOM	U.S. Space Command
STRATCOM	U.S. Strategic Command
TDA	Table of Distribution and Allowances
TOE	Table of Organization and Equipment
TTHS	Trainees, Transients, Holdees, and Students
UCC	unified combatant command
UCP	Unified Command Plan
UIC	Unit Identification Code

Introduction

The current emphasis of the Department of Defense's (DoD's) military transformation is on missions, platforms, weapons, forces, organizations, technology, and operational concepts.[1] Yet transformation also has implications for how human resource management systems and resources systems align to provide personnel having the requisite competencies as and when needed.[2] If there are disconnects among manpower cycles, personnel cycles, and resources cycles, misalignments can occur, and it can be unclear whether they are caused by overdemand in one system or undersupply in another. There must also be internal consistency among the parts of each separate system (e.g., numbers and kinds of people needed, their availability, and their training). While each separate system has its own objectives, processes, and metrics, the overall objective related to national defense must dominate.

Purpose of Research

The manpower system determines the needs of various organizations for military personnel with different characteristics. The resources system determines how many of these individuals will be paid for and pays for them. The personnel system enters, manages, develops, and exits personnel.[3] We were asked to review links among the manpower, resources, and personnel systems and outcomes from these links in order to (1) determine whether the systems are misaligned, (2) assess how the systems synchronize when misalignments occur, and (3) identify policies and programs for implementing improvements.

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[1] Department of Defense, *Transformation Planning Guidance*, April 2003.

[2] *Alignment* is a frequently used term with many meanings, and we were unable to readily discern a precise definition or metrics for this project. In some cases, the term appears to be synonymous with *interoperability* (discussed later). A general definition for *alignment* is the ability to share organization and system information in a manner that is timely and appropriate for facilitation of mission accomplishment by business units. *Misalignment* is bounded by organizational "white noise" at one extreme and mathematical standard deviations from a mean at the other.

[3] The manpower, resources, and personnel systems must fit not only with each other, but also with the other systems—such as the acquisition system (procurement of materiel) and readiness system (measurement of capability)—that govern the delivery of national defense. Examining these wider issues of fit was beyond the scope of our research.

Methodology

We addressed the objectives in four related tasks:

1. We used service and Defense Manpower Data Center requirements, authorizations, and inventory data to address the assumption that systemic misalignments among the three systems lead to organizations not having needed people at particular times and over longer periods.
2. We used case studies to understand how misalignments initially occur and how they are eventually adjudicated among the services and using organizations or, if not eventually adjudicated, how they affect personnel readiness. These case studies document the flow of activity from organizational design, to documentation of a manpower structure, to resource allocation against that structure, and to distribution of people against those resourced positions.
3. We used theory and models of systems with inputs and outputs related in time to understand complex relationships.
4. We synthesized Tasks 1 through 3 and made observations about how best to both integrate the systems and stabilize relationships among them.

After completing some initial research, we recommended to the sponsor that the research effort be terminated, and the sponsor agreed. The decision to terminate was based on our initial observations about the assumed problem. Given the limited data analysis and case studies suggested by the sponsor, we could observe instances of misalignment, but they either appeared to be inconsequential or effective action was taken to synchronize the systems involved. The misalignments also appeared to be frictional rather than systemic—in other words, contrary to the original assumption. This report thus describes our efforts on the research questions rather than a full analysis of them.

Report Organization

The next two chapters describe the issues as we understand them, Chapter Two from a systems perspective and Chapter Three from a functional perspective. Chapter Four discusses our review of data and data sources for demonstrating misalignment. Chapter Five outlines the two case studies carried out at our sponsor's suggestion: the conversion to the first Army Stryker brigade and the stand-up of U.S. Northern Command after 9/11. Chapter Six presents our observations and conclusions.

The Issues in Systems Terms

Systems

A system is a body of component parts integrated with continuity. In its simplest representation, a system has inputs, which it transforms or processes to produce outputs. The three systems of interest in this report are manpower (the system that handles demand for people with specified characteristics), resources (the system that provides program and budget dollars), and personnel (the system that supplies qualified people). As Figure 2.1 illustrates, the outputs of the manpower and resources systems are inputs to the personnel system, which produces qualified individuals.[1] The outputs of the personnel system are inputs to other systems, such as readiness, which measures unit capability to perform mission-essential tasks. Figure 2.1 shows what the personnel process and the personnel system outputs look like.

Figure 2.1
Manpower, Resources, and Personnel Systems: Flow for Creating Qualified Personnel
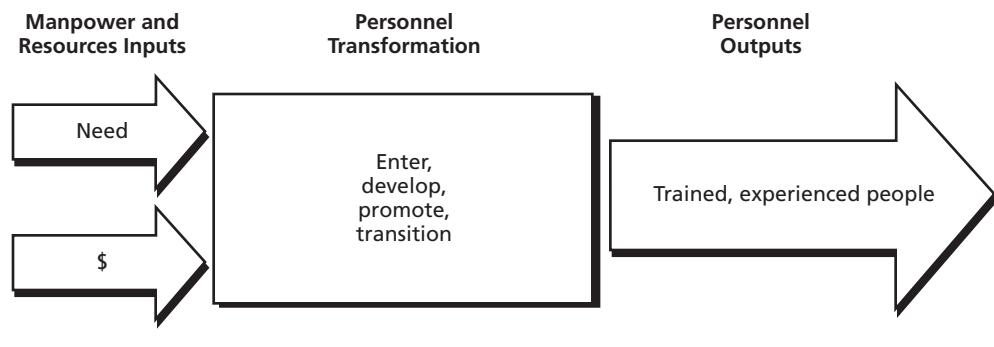
RAND *TR419-2.1*

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[1]   There is no precise language to describe the systems comprising the entire manpower, resources, and personnel enterprise; most people use the initialism "MPT," which is short for manpower, personnel, and training. Resources is assumed to be part of the MPT system, and each of the services has a resources unit as part of its personnel organization. (At the Office of the Secretary of Defense [OSD], it is in a different organization.) In this study, we assumed that training is one of the subsystems of the personnel system. For policy purposes, this is generally true in some military services, at least for individual entry and skills training. At OSD and in other services, however, training is more of a "distant cousin" in that it is not as organizationally tied to the other personnel subsystems. In this report, we refer to manpower, resources, and personnel as "systems" when we are discussing them separately or in terms of their own subsystems. We refer to them as "subsystems" when speaking of them as part of the overall enterprise of manpower, resources, and personnel.

We provide the following example as an illustration. A manpower demand signal for an infantry soldier in grade E-7 would enter the personnel system, as would the resources to effect the transformation, and a trained, experienced E-7 infantryman would emerge as an output from the personnel system. In this case, the transformation process to produce the desired output would take about 10 to 15 years.

The representation in Figure 2.1 of what are commonly referred to as "spaces," "dollars," and "faces" is what the systems literature would call a simple system. Complex systems have been defined as "made up of a large number of parts that interact in a nonsimple way."[2] A more complex explication recognizes that the demand signal for manpower and the resources to support it come from their own systems, known as, respectively, manpower or requirements, and resources or Planning, Programming, Budgeting, and Execution System (PPBES). In systems terms, we are describing what is now known as a *decentralized system of systems*. Decisions and activities are now interdependent and not under the command and control of a simple centralized system. Figure 2.2 depicts both a centralized system, like that shown in Figure 2.1, and a decentralized system, which provides a truer understanding of the nature of the systems.

Compared with a decentralized system of systems, a centralized system tends to have a more defined and clearer authority because it is centrally controlled. Moreover, the constituent parts are willing to cede autonomy and achieve greater connectivity because they are related. A decentralized system has diffuse control, authority, and decisionmaking. Each component

Figure 2.2
Centralized System vs. Decentralized System of Systems

Centralized   Decentralized

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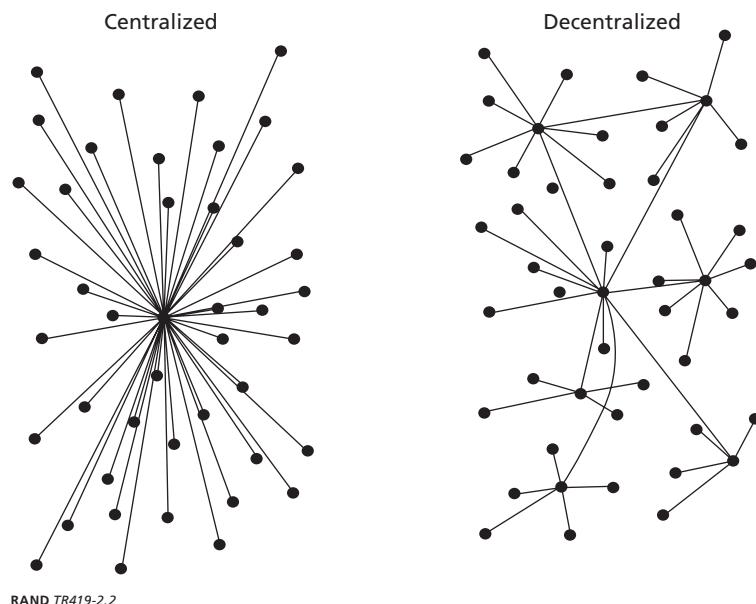
2   Herb Simon, as quoted in Sendil K. Ethiraj and Daniel Levinthal, "Moduality and Innovation in Complex Systems," *Management Science*, Vol. 50, No. 2, February 2004, pp. 159–173.

system is less related to the others, has organizational structures built around it, and is not willing to cede authority.[3] A decentralized system of systems has been likened to a problem for which no one authority is accountable. An issue to consider is whether the component systems need to relate to fulfill their own purposes or are self-sustaining and purposeful without the larger system. For example, does the personnel system have any purpose absent the manpower system?

The representation of the personnel system in Figure 2.1 omits details that get at the heart of the personnel community's view of the perceived problem. The personnel transformation process takes about 10 to 15 years to produce a trained Army E-7 infantryman. This is known as cycle time. The demand signal does not arrive 15 years prior to the need to give sufficient lead time, and resources wax and wane inconsistently over the 15-year production process. In fact, in contrast to the personnel system's long cycle time, the demand signal's cycle time can be instantaneous (manpower requirements are changed on paper or in a database) and can change innumerable times during the 15-year cycle. Moreover, the available resources are generally discussed in five-year windows (PPBES inputs via the program objective memorandum), in two-year windows (current year and budget year), or in monthly windows (during execution). But none of these resource levels is known with certainty in advance; and as they modulate, the achieved cycle time for the personnel system goes up or down or the output produced is less than specified.

To a defense personnel manager, the several systems appear misaligned. In essence, the inputs and outputs of the several systems do not align in time to fit the cycle times of the personnel community. But the situation is even more complicated than that. The personnel "system" is in fact a system of systems. From one view, down within the personnel system, there are what could be described as subsystems, such as accessing, training, experiencing, promoting, retaining, assigning, and separating. Each of these has inputs and outputs and complex relationships with the others. Even if the requirements and resources systems were static (or predictable, which is discussed shortly), the multiple interactions within the personnel system could cause undesirable variations in process outputs.

Because of all these interactions, adjustments are made within the personnel system. For example, if enough people are not accessed, the retention subsystem attempts to keep more people in the system. If enough people are entered but not enough people are retained, the promotion system moves people faster through the grades to meet grade needs. However, the experiencing subsystem may not adjust (e.g., by shortening assignments to provide breadth at the expense of depth), so soldiers available for assignment may not have as much experience as desired or will rotate through assignments faster than desired. At the end of all these internal adjustments, the assignment subsystem and the readiness subsystem adjust the tolerance around the initial specification.[4] For example, the personnel system might conclude that it has met the specified need if the soldier provided is at one grade higher or two lower or in the broad job family rather than the exact occupation. The personnel community perceives

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[3]   Discussion based on July 2006 interview with Dr. John Farr, Stevens Institute of Technology.

[4]   Michael Schiefer et al., *Air Force Enlisted Force Management: System Interactions and Synchronization Strategies*, unpublished RAND research, discusses the internal workings of the Air Force personnel system and several of its subsystems.

these differences as being within an acceptable tolerance around the specification. However, the perception of the using community (which the manpower subsystem initially represented) is that it is not getting exactly what is needed and that the personnel community is prone to mismanagement or worse.

This is the crux of the issue from the personnel community's perspective. The risks, not the reward incentives, appear to tilt unfairly toward the personnel community. Are there ways to rearrange the inputs and outputs of the several subsystems[5] or to better align them in time?

We were asked to review the interactions, not the internal workings, of the personnel system and the manpower and resources systems. We thus examined "the basic links among," or "the interactions of," this particular system of systems, as shown in Figure 2.1.

Why Three Subsystems?

Modularity is a general set of design principles for managing the complexity of large, independent systems. The subsystems, or modules, are "discrete chunks that communicate with each other through standardized interfaces or rules and specifications."[6] Grouping related activities for manpower, resources, and personnel into their own modules and delineating lines of authority "seeks to minimize redundant information flow, reduce conflicts, and improve coordination."[7]

However, one could envision an alternative system of systems that either has more than three modules (by breaking out certain activities from the existing three), has fewer than three modules (by integrating activities of one module into the other two), or has three modules but with certain activities moved from one module to another. Thus, one design parameter is the appropriate number of modules. While it would be interesting to explore this issue, the scope of our research did not allow it. We assumed that three modules were appropriate; they have existed in their present form for at least 50 years.[8]

Another design parameter is the appropriate mapping of activities to the three modules. A general goal is to group strongly interacting elements, or parts, together and separate weakly interacting ones. Without doing a full decomposition of the manpower, resources, and personnel modules, one could argue that they exist as they do because the current arrangement meets this goal better than any other arrangement. In other words, entering and retaining are more

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[5] Some in the personnel community suggest that a better system could be devised, one in which the outputs of the personnel system were the de facto inputs to the manpower system. In such a model, the manpower system could use only what the personnel system produced. We discuss this model later in the chapter.

[6] Ethiraj and Levinthal, 2004.

[7] Ethiraj and Levinthal, 2004.

[8] The first manpower directive of the DoD dates from 1954 and was not replaced until 2003. The PPBES has been used since the 1960s. One could argue that the personnel system, in much of its present form, dates from World War I, with significant changes after World War II. See Sheila Nataraj Kirby and Harry J. Thie, *Enlisted Force Management: A Historical Perspective*, MR-755-OSD, Santa Monica, California: RAND Corportion, 1996.

powerfully connected to each other and the other elements of the personnel subsystem than they are to elements of the manpower subsystem.

A third design parameter is the appropriate interactions *within* each module, which we discuss in this report even though these interactions were not one of the sponsor's research interests. The sponsor's expressed interests were captured in a fourth design parameter—the interfaces, or interactions, among the modules.[9] In particular, the question of interest dealt with whether these interactions were aligned. In other words, Are the modules able to share organization and system information in a manner that is timely and appropriate for facilitating mission accomplishment?

Interoperability is one of the key concepts for judging whether a complex system is internally aligned. DoD defines *interoperability* as "the ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces, and to use the services so exchanged to enable them to operate effectively together."[10] A Carnegie Mellon report suggests that there are several types of interoperability.[11] Of interest to this study were operational (between systems) interoperability and constructive (between responsible organizations) interoperability. Through our interviews and through data analysis, we sought to understand whether the systems and the organizations responsible for them operate effectively together.

Why Not an Enterprise Architecture?

An enterprise architecture is a way to formally describe and codify the design principles outlined above. The manpower, resources, and personnel systems are not stipulated in a formal enterprise architecture. One pertinent question is whether an investment in such an architecture would improve system and organization interoperability.

An *architecture* is "the fundamental organization of a system embodied in its components, their relationship to each other and to the environment, and the principles guiding its design and evolution."[12] The DoD Architecture Framework[13] defines a common approach for describing, presenting, and comparing DoD enterprises to facilitate the use of common principles, assumptions, and terminology across organizational boundaries. The policy is to improve interoperability among various systems. "The overarching goals of enterprise architecture are

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[9] Discussion adapted from Ethiraj and Levinthal, 2004.

[10] Joint Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, 12 April 2001 (as amended through 30 November 2004).

[11] Edwin Morris et al., *System of Systems Interoperability (SOSI): Final Report*, CMU/SEI-2004-TR-004, Pittsburgh, Pennsylvania: Carnegie Mellon, April 2004.

[12] Institute of Electrical and Electronics Engineers (IEEE), Standard 1471-2000.

[13] Department of Defense, Chief Information Officer, "The Department of Defense Architecture Framework (DODAF)," Memorandum, February, 9, 2004; and Department of Defense Architecture Framework Working Group, *DoD Architecture Framework Version 1.0, Volume I: Definitions and Guidelines*, February 9, 2004.

to manage the complexity of the enterprise, align business strategies and implementations, and facilitate rapid change in order to maintain business and technical advantages."[14]

The Defense Acquisition University has built an integrated defense acquisition, technology, and logistics life-cycle management framework that shows the fit of the Joint Capabilities Integration and Development System (JCIDS) (which is the requirement), the Defense Acquisition System, and PPBES over a life cycle. The framework serves as a pictorial road map of key activities in the systems acquisition processes and illustrates the interaction of the three major decision-support systems. These systems are arguably counterparts of the three systems in the manpower, personnel, and resources enterprise, but we are aware of no existing, comparable framework. Parts of such a framework do already exist; they are in service documents such as *How the Army Runs*.[15]

We raise but leave unanswered the question, Would an enterprise architecture for manpower, resources, and personnel or a life-cycle illustration of the interactions be useful?

Is the Personnel System Cart or Horse?

The literature we reviewed generally had the components of the overall system linked in time from requirements through resources to personnel. In other words, need came first. In discussions, some members of the personnel community suggested that the personnel system should fundamentally drive the manpower (requirements) system. In this view, the overall system must be disciplined to request only what can be supplied. Another view is that all three systems should be simultaneously determined. Is this feasible? Is it desirable?

The analogy of gears applies here. The mental image of the three systems meshing together simultaneously to align their variables is nice but impossible. Three independent gears meshed together create gridlock. They cannot move; the overall system is in stasis.

One gear can be in the middle and drive the other two gears, however. Or all three gears can be lined in a row or column, one driving the other two. If the gears are not continually meshed, a lever can move one or more gears to affect the others at different times. If two gears are stacked, the other gear can drive them both, or the two can drive the one. The key to understanding alignment is to recognize that one gear must dominate either continually or at certain times. For the latter arrangement, different gears can dominate at different times.

So the remaining question becomes, Which gear—manpower, resources, or personnel—should dominate, and when—continually or intermittently? One interesting answer is to have personnel be permanently dominant—i.e., personnel would drive both resources and manpower authorizations. Authorizations would thus be shaped to reflect likely personnel inventory, and the budget and program would be used to pay for likely personnel inventory. This is the reverse of how the present system is believed to operate, but there are enough manifestations of the logic to suggest that it might be practical for the future at particular times.

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[14]   Alessio Mosto, "DoD Architecture Framework Overview," Briefing, May 2004.

[15]   U.S. Army War College, *How the Army Runs: A Senior Leader Reference Handbook (2005–2006)*, 25th edition, 2006.

Such a system is fraught with potential dangers, however. For example, without a target against which to develop, or "shape," personnel inventory, the system risks becoming obsolete or mismatched to mission or capability needs. In other words, it quickly becomes nonstrategic and nonsupportive of the larger, national defense environment.

The personnel system should not drive manpower permanently, and the two cannot be simultaneously derived. However, the Joint Defense Capabilities Study provides a useful assessment:

> As with other functional elements of the enterprise domain, workforce development is often reactive to decisions concerning joint capabilities, rather than being fully considered when those decisions are made. To effectively support the new planning processes, human capital needs must be addressed systematically and proactively. Two major changes are required to achieve that goal: first, analyses of workforce and training requirements should be fully incorporated in the analyses of alternatives for all capabilities, and second, the pool of experts available to perform those analyses must be greatly deepened.[16]

It does appear that initiatives such as JCIDS and Human Systems Integration (HSI) are considering the potential of outputs from the personnel system serving as inputs to the manpower system.

Summary

The overall enterprise consisting of the manpower, resources, and personnel systems is complex and has multiple, interdependent inputs and outputs. Each of the three systems in the aggregate is itself a complex system of systems when disaggregated. While not optimal, this system of systems, at least at the military-service level, appears reasonably aligned in terms of operational and organizational interoperability.

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[16] Joint Defense Capabilities Study Team, *Joint Defense Capabilities Study Final Report*, December 2003, p. 3-19.

The Issues in Terms of Manpower, Resources, and Personnel

System Objective

What is the objective of this system of systems? Our initial assertion was that its objective was to produce the perfect, dynamic match of an organization's need for people with personnel who are available and have the needed qualifications, optimally facilitated by program and budget resources that affect both parts of this match. In essence, the overall enterprise's objective is to have its manpower, resources, and personnel systems integrated with continuity to produce desired outputs over time.

Background

We started this study with the assumption that the individual manpower, resources, and personnel systems were well developed. We were not striving to analyze and change the nature and workings of these individual systems of the overall enterprise. These systems may even be well integrated from the perspective of a long-term, stable environment, but their integration in a short-term, unstable environment (short cycle times as a result of unplanned change)—if integration occurs at all—may be ad hoc and undisciplined. To the extent that integration does occur when needed (on the fly), it will require heroic efforts, silver bullets, and long working hours. Our task was to study the long- and short-term integration of these three systems to understand how they might be more closely aligned to achieve the stated objective. [1]

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[1] There is no precise language to describe the systems comprising the entire manpower, resources, and personnel enterprise; most people use the initialism "MPT," which is short for manpower, personnel, and training. Resources is assumed to be part of the MPT system, and each of the services has a resources unit as part of its personnel organization. (At the Office of the Secretary of Defense [OSD], it is in a different organization.) In this study, we assumed that training is one of the subsystems of the personnel system. For policy purposes, this is generally true in some military services, at least for individual entry and skills training. At OSD and in other services, however, training is more of a "distant cousin" in that it is not as organizationally tied to the other personnel subsystems. In this report, we refer to manpower, resources, and personnel as "systems" when we are discussing them separately or in terms of their own subsystems. We refer to them as "subsystems" when speaking of them as part of the overall enterprise of manpower, resources, and personnel.

When we examined quantitative indicators of components of the three systems (e.g., individuals account underfunded by x percent; manpower authorizations overstated by y percent; personnel shortages of z percent because of resources shortfalls), we observed that the likelihood of an operating unit receiving 100 percent of its expected personnel inventory is minimal given the complexity of the system and long-standing practices related to the system. This is not necessarily because of inefficient operation or lack of integration; it could stem from choosing among alternatives in a resource-constrained environment. The choice of having fewer people in each unit in order to have more units or more modern equipment is a different issue from whether the systems integrate efficiently. In the next section, we review long-standing practices related to these issues.

Long-Standing Practices and Frictions Affecting Outcomes[2]

Strength management is concerned with matching the inventory of people in a military service with the needs for them in units and organizations that accomplish military missions. Both parts of this match are affected by the availability of program and budget dollars. This section describes how one of the services, the Army, manages its strength. The other services use a generically similar process, but important specifics can differ by service.[3]

Spaces and Budget Dollars Are Related

Where does the need for people come from? In general, defense guidance tells a military service what missions and scenarios it must organize and train its units for. Internal service processes lead to decisions about which specific types of units to create, whether those units should be reserve or active components, and whether those units should be resourced at 100 percent of requirements or some lesser percentage. Other processes determine the mix of officers to enlisted and the grade and skill content for different types of units.

The result of these force decisions is the service's *programmed force structure*, which is the set of units and organizations that exists in the current year and the sets of units and organizations planned to exist in future years. The *programmed manpower structure* is the sum of all the requirements for military people by grade and skill in all units and organizations of the programmed force structure.[4] More commonly, this is referred to simply as "the requirements." However, because of budget constraints or policy dictates, a service may choose to limit its

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[2]   This section is adapted from John Schank et al., *Relating Resources to Personnel Readiness: Use of Army Strength Management Models*, MR-790-OSD, Santa Monica, California: RAND Corporation, 1997. See also Army Force Management School, "Manning the Force Briefing," Ft. Belvoir, Virginia, undated.

[3]   For an excellent discussion of U.S. Marine Corps and Navy practices in these areas, see John C. Barry and Paul L. Gillikin, *Comparative Analysis of Navy and Marine Corps Planning, Programming, Budgeting and Execution Systems from a Manpower Perspective*, Monterey, California: Naval Postgraduate School, March 2005.

[4]   This includes TOE (Table of Organization and Equipment) and TDA (Table of Distribution and Allowances) units. TOE units are operational entities composed solely of military personnel. TDA units are administrative organizational entities that perform a wide range of functions and are composed of both military and civilian workforces.

resourcing of these requirements with budgeted (authorized) manpower.[5] As a result, a *force structure allowance* is used to define billets in the programmed manpower structure that the service plans to fill in a given period.[6] These "authorizations," or "spaces," are what strength managers are most concerned with meeting as they deal with personnel management issues.

Faces and Budget Dollars Are Related

How many people, by grade and skill, are available to fill the spaces? Each service requests an annual end-of-fiscal-year strength ("end strength"), and Congress approves (or adjusts) it during the authorization process. This end strength needs to be large enough to provide *operating strength* ("faces") against authorizations in the units and organizations, and to provide for people to be in training or in transition between assignments ("individuals").[7] The level of end strength budgeted and appropriated and the service's success in managing the individuals account[8] and such activities as recruiting, training, and rotation can affect the number of "faces" that can be allocated to the available "spaces."

Operating Strength Deviation: Difference Between Unit Faces and Unit Spaces

In the Army, the difference between the number of people available to fill authorizations in units (operating strength) and the number of authorizations in units is called the *operating strength deviation*. If there are more faces than spaces available, the deviation is positive; negative deviation means more spaces than faces. The Army measures this deviation throughout the operating year and as projected into a future year. It does so because the deviation represents the ability to provide people to unit commanders who have been led to expect them by virtue of their authorizations through the manpower and resources subsystems. The operating strength deviation can be structural (caused by too many authorizations or not enough operating strength) or frictional (caused by seasonal patterns of personnel entry, loss, and assign-

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[5] One criticism of this force development process is that it is not sufficiently resource constrained earlier in the process.

[6] Periodically, DoD sets programming goals—for example, that at least a certain percentage of requirements will be authorized for fill. Some units will have less than the specified percentage. Moreover, the services can and do accord priorities to certain units for fill above 100 percent.

[7] The individuals account (or Trainees, Transients, Holdees, and Students [TTHS] account) is defined as the actual or projected people not filling billets in the programmed manpower structure. It is typically 12 to 15 percent of end strength.

[8] All in all, strength management, by itself, is a complex process with complex interactions that lead to its own misalignments. Because of this complexity, models representing the process are used to manage and project. For example, in the Army, at a global level, strength managers match current and projected personnel inventory to authorizations in the aggregate, where the focus is on people moving in (via recruiting and training) and out (via separation to include retirement) of the Army over time.

$$FutureStrength = CurrentStrength + Gains - Losses$$

The faces and spaces might also be matched on a disaggregate basis, where the match is by skill and grade and the focus is more on movement within the Army.

$$FutureTrainedStrength = CurrentTrainedStrength \pm MOSgains \& losses \pm Gradegains \& losses$$

where MOS stands for military occupational specialty.

ments). Moreover, if strength and authorizations are increasing or decreasing over the year, the balancing of faces and spaces becomes more difficult. Of course, whether the deviation is positive or negative at any time is affected by everything that might affect both parts of the match of organizations' needs for people with personnel who are available and have the needed qualifications. For example, an overly large force structure, programmed manpower structure, or force structure allowance could lead to a negative deviation, as could insufficient end strength or an overly large individuals account. Figure 3.1 portrays the relationship graphically.

Strength managers are usually not responsible for the number of authorizations (although they may forecast future authorization levels), the end strength, or the size of the individuals account (although they may predict future values for the individuals account given budget estimates of end strength). Strength managers are responsible for determining the likely effect of recruiting, promoting, and separating activities on the ability to match faces to spaces now and in the future. Thus, the objective in managing strength is to minimize the operating strength deviation or misalignments among the systems in the Army. The fact that the misalignments are measurable is a manifestation of the systems' interoperability.

Figure 3.1
Army Strength Management
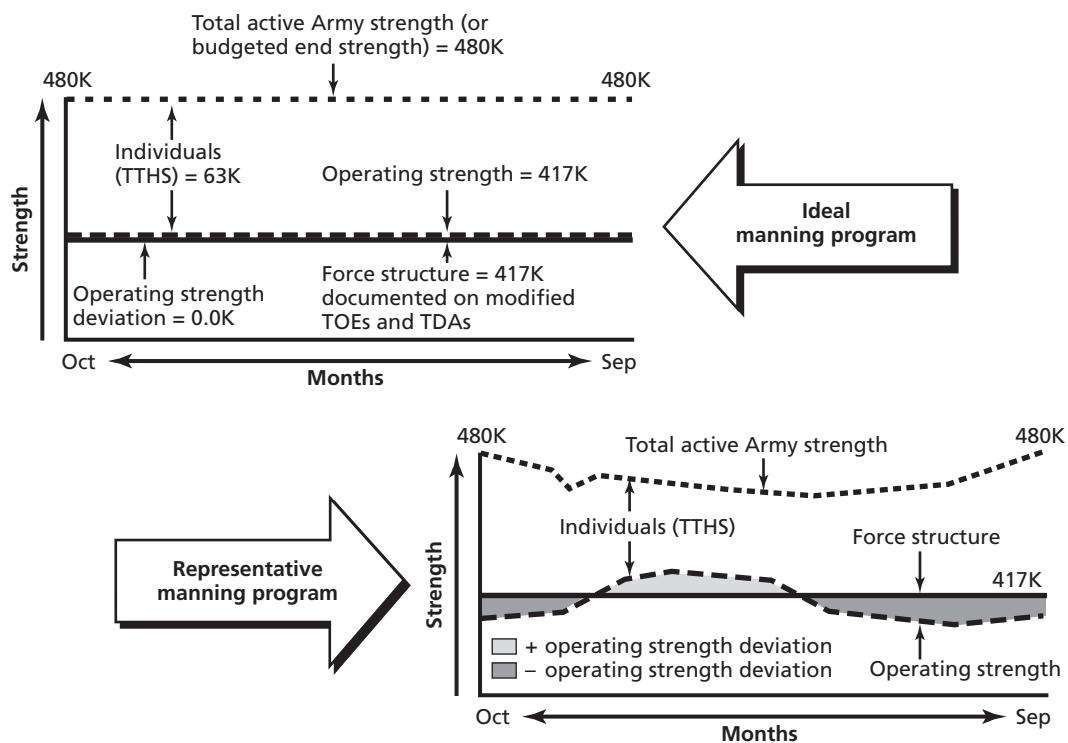
SOURCE: U.S. Army, "Army Individuals Account and Force Manning," Briefing, July 7, 2003.
NOTES: Operating strength = total strength – individuals account.
Operating strength deviation = operating strength – force structure.
RAND *TR419-3.1*

Long-Standing Frictions Within and Between Systems[9]

The Army's personnel management distribution system strives to place the right soldier in the right job in the right unit at the right time. However, there are personnel management and decision systems between the service level and the units that affect matches and their timing.

For example, the Army headquarters, major commands, and local commanders all set priorities for assigning personnel to units or for filling specific positions within a unit. The Army's allocation concept sets higher priorities, and therefore higher personnel levels, for selected units in the force. Rather than uniformly allocating personnel to units, some units are manned at 100 percent (or even more than 100 percent) of required strength. Others, lower in the priority scheme, will have a lower percentage of their personnel positions filled.

Other factors play a role in the assignment of soldiers to specific units. Decisions and judgments are made at every level in the personnel assignment process. The need to train a soldier en route to a new assignment, the requirement for hardship or other types of delays in reporting to a unit, and even inaccurate data about unit personnel needs can lead to problems in matching trained people to unit needs in a timely fashion. Moving hundreds of thousands of people annually among thousands of units and hundreds of locations generates a certain amount of friction. Thus, even if the Army had enough qualified soldiers available service-wide, their presence in the right units would not be ensured. And it would be traumatic for individuals and the Army itself to constantly shift people among units because of mistakes or priority changes.

Complex and most likely nonlinear relationships exist among policies, resources, and outcomes. These relationships make the time it will take to achieve an outcome uncertain. Increased resources may not result in increased matches of faces to spaces, and the time needed to have an effect may vary. For example, the Army may allocate additional resources to increase end strength. Initially, the increased end strength will be absorbed by the individuals account because more soldiers will be in the recruiting and training pipelines. The effect in this case is no increase in the units' operating strength in the short term, although there should be an increase in the long term. Conversely, the Army may reduce resources by decreasing end strength. Fewer soldiers will be recruited and trained, resulting in a decrease in the individuals account with, potentially, an increase in the operating strength of units in the short term but not the long term. Time is a variable in the equation. And, of course, it may be the level of match in the system that changes, rather than the resources, because personnel policy changes affect the number of people available in the individuals and operating accounts.

Last, the outcomes depend on the behaviors and choices of individuals, which are influenced both by service policies and procedures and by variables external to the military, such as civilian unemployment and wage rates. Given that predicting human behavior is problematic, all of the services use simulations and models to predict likely outcomes. They also closely manage personnel subsystems, such as recruiting and retention.

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[9]   Section adapted from Schank et al., 1997.

Other Factors Affecting the Personnel System

Nature of Change

Implementation following changes in authorizations follows well-documented and well-planned procedures. Responsibilities are clearly laid out, tasks are assigned, and routine communication is established. As a result, when change occurs, training courses are developed, affected agencies are contacted, unit commanders and affected individuals are notified, and individuals are tracked to see that they receive training and are reclassified appropriately. The systems used in the services make continuous adjustments. If a particular authorization change turns out in practice to cause serious problems, the problems will likely be noticed, and further modifications to the authorizations will be made.[10]

Routine, planned change is manageable, and, as discussed above, there are specified processes for its management. Often, however, change is not routine or planned. For example, each of the following changes has non-routine effects that may differ in each case:

- Wars and drawdowns
- New, unplanned force structures and organizational designs
- New mixes of active and reserve components
- Civilian-to-military conversions and vice versa
- Introduction of new technology/systems
- Ups and downs in the economy (affects recruiting and retention)
- Ups and downs in defense resources
- Inability to forecast perfectly for 1.4 million active duty military in a multitude of skills, grades, and organizations.

The case studies in Chapter Five highlight some of these non-routine effects and how they are managed by the subsystems.

Time as a Variable

Adding the variable of time to the variables of spaces, faces, and dollars in a flow context illustrates the linkage disconnects that can occur. Even if the subsystems fit together (inputs and outputs of each line up) in a static sense (and they may), the dynamics of the overall system lead to lack of fit when unplanned change occurs. Change does not always occur to fit the planned, time-phased interactions of the subsystems. For example, time is the culprit if the personnel system waits to acquire-train and/or retain personnel until it has perfect information about the demand for those personnel. The personnel system needs to take advantage of any data (regardless of their uncertainty) and improve them as the manpower, resources, and personnel systems progress through time.

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[10]   Mary Layne et al., *Military Occupational Specialties: Change and Consolidation*, MR-977-OSD, Santa Monica, California: RAND Corporation, 2001.

Data and Operating Practices

Our literature review, interviews, and discussions with subject matter experts indicated that the three subsystems of interest—manpower, resources, and personnel—may be better aligned than was originally assumed. This is particularly true at the military-service level. Each service describes the subsystems as if they were, in fact, aligned. In the Marine Corps, the manpower and personnel databases are integrated within one data system, the Marine Corps Total Force System (MCTFS), which facilitates organization and system information sharing in a timely and appropriate manner. A general belief is that all the services are moving in this direction, perhaps facilitated by the Defense Integrated Military Human Resource System (DIMHRS) development. The broad data systems of a service (e.g., the Army's Management Decision Packages [MDEPs] and Program Evaluation Groups [PEGs]) and of DoD (e.g., the Future Years Defense Program [FYDP]) contain manpower and dollar information.

At the military-service level, constructive (organizational) alignment exists in practice for the three subsystems. Each service has a resources organization as part of the overall personnel organization. This is not true at the OSD level, where the resources subsystem is organizationally distinct from the manpower and personnel organization.

Each service has devised useful operating practices to minimize misalignment. In the Army, for example, because the "official" statement of future manpower authorizations was perceived as not being available to the personnel system in a timely fashion, the personnel community devised a method for making its own forecast of future authorizations that reflects them with sufficient accuracy. (Knowledge about which specific units will be activated, deactivated, or significantly modified is only needed at distribution or assignment time; prior to that, the personnel community only needs to know the changes by grade and occupation if not by unit designation.)

Summary

The outcomes of the manpower, resources, and personnel systems affect the objective of the overall enterprise. A key assumption is that these systems operate in an existing steady state with somewhat known and stable frictions and flaws of the types described above. That is, it is assumed that these three systems produce faces to fill spaces in units in a less than optimal way because of known frictions among them. Barry and Gilliken describe these as "coordination and accountability issues."[11] These frictions should be minimized in the ordinary course of doing business.

These day-to-day frictions among the systems were not of primary interest to the sponsor of this research. Nor were the frictions within each of the three systems.[12] Of interest in this project were the structural, or systemic, inefficiencies—those that prevent the sharing of

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[11] Barry and Gilliken, 2005, p. 42.

[12] For an analysis of how the Navy might improve its manpower requirements process, see Carol S. Moore et al., *Inside the Black Box: Assessing the Navy's Manpower Requirements Process*, Alexandria, Virginia: Center for Naval Analysis, March 2002.

information in a timely manner—that occur among the systems as change occurs in the larger environment of defense. The next chapter describes our analysis of data for evidence of such systemic inefficiencies.

Data Analysis

One of our tasks was to demonstrate with data that systemic misalignments among the three systems—manpower, resources, and personnel—cause units not to have needed personnel over long periods. Our research sponsor identified several cases for us to review in detail (we describe our review in Chapter Five). We were also asked to use the Army as an exemplar to ascertain whether data show that there are severe misalignments.

We used selected literature reviews, several databases, and interviews with subject matter experts to determine instances of apparent misalignment. For example, we used the Army's WebTaads database and the Defense Manpower Data Center's Forces and Resources Manpower Information System (FORMIS) database to look at annual changes in authorizations across certain occupations. We also used the WebTaads database to examine how authorizations and inventory aligned over successive periods as the Army created its Stryker brigades. We observed misalignments at points in time for all of these data sets, but we found no reason to conclude that misalignments of this type were systemic rather than transitory and frictional. In this chapter, we report on our data gathering and analysis efforts.

Studies have shown consistently that there are problems associated with accurately filling all of the manpower spaces created. For example, the results of a study issued by the Government Accountability Office (GAO)[1] identified 73 occupations that have been consistently designated as hard to fill within the active and reserve components of the four military services.[2] The same study also showed that in early fiscal year (FY) 2005, 63 percent of the Army's active component specialties were overfilled, and 32 percent were underfilled. Seven current occupations were on both the "hard-to-recruit" and "hard-to-retain" lists. The GAO also cited a Congressional Budget Office study asserting that on average, from FY 1999 through FY 2004, about 30 percent of the occupations for enlisted personnel experienced shortages, and about 40 percent experienced overages. For our study's purposes, however, these observations relate more to systemic or frictional problems in the personnel system than to problems among the manpower, resources, and personnel systems.

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[1] The GAO, formerly known as the General Accounting Office, changed its name to Government Accountability Office in 2004.

[2] Stewart, 2005.

A 2001 RAND study, which was based on data through 1998, looked at the effect of consolidations of military occupations on readiness for the Army and Marine Corps.[3] The study examined availability, experience, and qualification for personnel over time: six months prior to consolidation, at consolidation, six months later, one year later, 18 months later, and two years later. With respect to this type of manpower change and its effect on the personnel system, the authors observed:

> MOC [military occupation] changes are not instantaneous. In fact, our review of the data suggests that a period of turbulence is introduced that lasts for up to two years. After that period, the system adjusts to the new MOC structure. During this transition from one state to another, leeway exists for more errors in personnel management, such as misassignments, to occur. Moreover, particular units involved in the transition bear the brunt of the frictions as the change takes place. At the end of the transition, the new state might be qualitatively better if the expected benefits materialize. However, if, before the MOC change, a military Service does not have enough authorizations overall compared to workload or fewer personnel than authorizations, a similar situation will exist after the MOC transition. A MOC change cannot be expected to resolve such preexisting conditions in the overall system as too many or too few authorizations or too few personnel.[4]

The study noted that examining data over a two-year transition period allowed the effects of temporary disruptions to smooth out: "For individuals and for units, the processes of enlarging, eliminating, and consolidating jobs on a day-to-day basis would seem less smooth than do aggregate data over longer periods of time because such change is not immediate and because of frictions in personnel management processes during the period of transition."[5]

To what extent do authorizations (requirements) change on a regular basis? And what happens as a result? We examined year-to-year changes in authorizations for all officer and enlisted occupations to understand the magnitude of authorization changes.

Year-to-Year Changes in Authorizations

There have been numerous changes across the Army at the occupational and grade level, as Figure 4.1 shows.

The y-axis in Figure 4.1 indicates percent change using the end of FY 1996 as a base; the x-axis indicates the absolute value of the change. Thus, some data points have large absolute but little relative change, or the opposite. Each data point in the figure represents one enlisted grade band (E1–3, E4–6, E7+) and career management field (CMF) combination, or one officer grade band (WO, O1–3, O4–6, O7+) and officer branch combination. As can be seen, even with this prior consolidation, the vast majority of changes in authorizations were near zero

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[3]   Layne et al., 2001.

[4]   Layne et al., 2001, p. 24.

[5]   Layne et al., 2001, p. 42.

Figure 4.1
Percent Change in Army Authorizations, Officer and Enlisted, FY 1996–2003
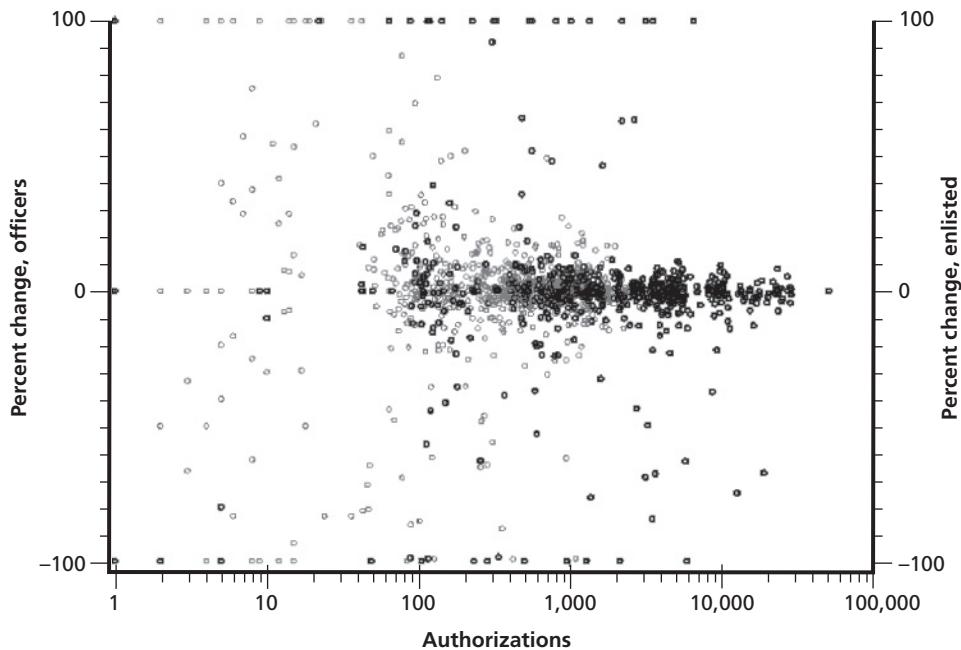
SOURCE: FORMIS data, Army, FY 1996–2003.
NOTE: One observation per grade band and branch/CMF; all observations above 100 forced to equal 100.
RAND *TR419-4.1*

percent over the seven years. We hypothesized that manpower changes of this nature are manageable within the personnel system. Turbulence does not mean a lack of interoperability. At the extremes are certain combinations of grade and occupation that had 100 percent or more change, either growing or contracting. We also hypothesized that over longer periods, change of this magnitude can be accommodated.

Figures 4.2 and 4.3 take a narrower look at the change from the end of one fiscal year to the end of the next. Figure 4.2 shows the aggregate change over the entire 1996–2003 period, as well as year-to-year change for the first three of these years. Figure 4.3 shows year-to-year change for the remaining four years.

As is evident, most changes are very small in number and should have no practical effect on the personnel system in terms of its ability to respond. Since end strength may not change significantly over this period, there are as many pluses as minuses, so most of the changes will be accomplished through retraining or designation into a new occupation, or through promotion to a new grade or a slow down of promotions in certain occupations. We were asked to examine one of the larger changes; we discuss that examination in the next chapter.

Figure 4.2
**Percent Change in Army Authorizations, Officer and Enlisted, Aggregate for FY 1996–2003
and Year to Year for FY 1996–1998**
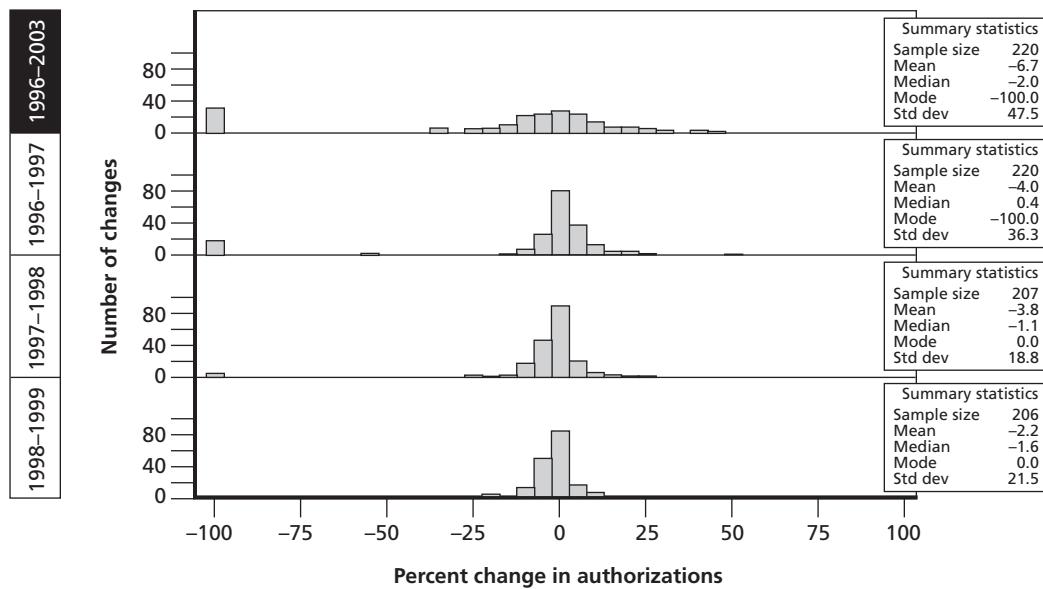
SOURCE: FORMIS data, Army, FY 1996–2003.

NOTE: One observation per grade band and branch/CMF; all observations above 100 forced to
equal 100.

RAND *TR419-4.2*

Observations from Data Analysis

Our initial data-based reviews indicated no significant problems that were systemic in nature.
The subsystems are interoperable; they exchange information in a timely and appropriate
manner. The overall percent change in manpower authorizations is minimal, and the person-
nel system should meet these demands. The large volume of small changes could introduce
long-term frictional problems, and large numbers of authorization changes for higher grades
in smaller occupations could also introduce challenges. But in both of these cases, the mecha-
nisms for signaling demand to the inventory subsystem would still be present. The inability to
quickly create senior people for assignments is not a problem of cross-subsystem information or
links, but one of a lack of adaptability in the closed military personnel management system.

Figure 4.3
Percent Change in Army Authorizations, Officer and Enlisted, Year to Year for FY 1999–2003
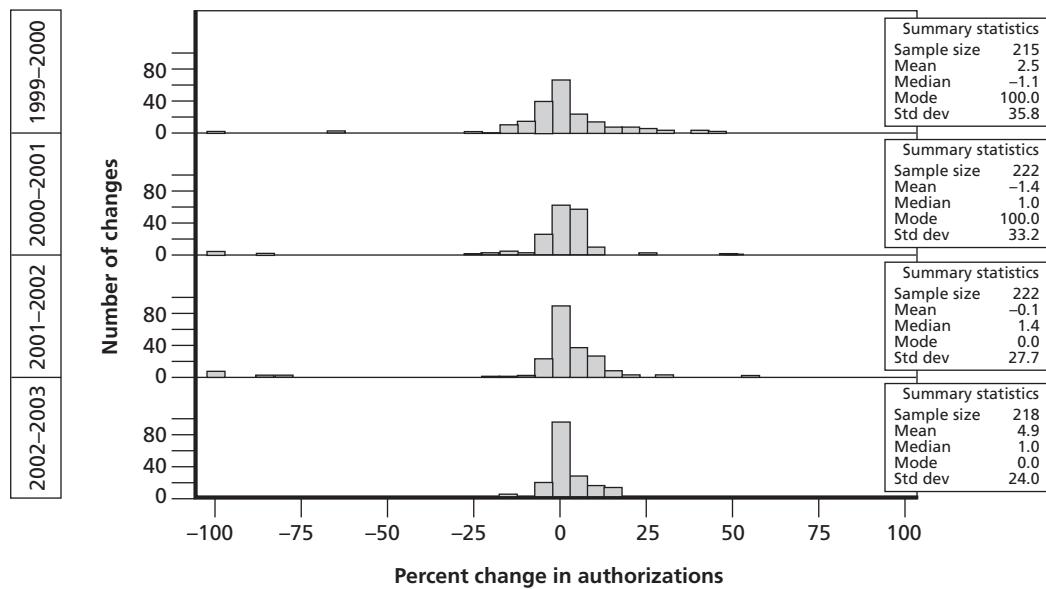
	Summary statistics	
1999–2000	Sample size	215
	Mean	2.5
	Median	−1.1
	Mode	100.0
	Std dev	35.8
2000–2001	Sample size	222
	Mean	−1.4
	Median	1.0
	Mode	100.0
	Std dev	33.2
2001–2002	Sample size	222
	Mean	−0.1
	Median	1.4
	Mode	0.0
	Std dev	27.7
2002–2003	Sample size	218
	Mean	4.9
	Median	1.0
	Mode	0.0
	Std dev	24.0

SOURCE: FORMIS data, Army, FY 1996–2003.

NOTE: One observation per grade band and branch/CMF; all observations above 100 forced to equal 100.

RAND *TR419-4.3*

Case Studies

We pursued two sponsor-suggested case studies in detail: the stand-up of the Stryker brigade in the Army and the stand-up of the U.S. Northern Command (NORTHCOM). These cases were chosen because they involved large-scale or rapid change, both of which are assumed to lead to misalignment.

In the case of the Stryker brigade, a new materiel system was being introduced at the same time that ready units were needed for deployment, and questions about the responsiveness of the personnel subsystem arose. In the NORTHCOM case, a quick response was needed within a long-cycle-time system, and questions arose about the feasibility of meeting the need for personnel. For each of these cases, we described the flow of activity from organizational design, to documentation of a personnel structure, to resource allocation against that structure, and to distribution of people against those resourced positions. For each case, we could ascertain how misalignments might occur. We could also ascertain how the potential misalignment was either avoided or mitigated through adjustments to mandated processes by the services and the using organization. If such actions were taken, we would consider the systems aligned in that they shared organizational and system information in a timely and appropriate manner.

This chapter presents a brief summary of each case, followed by the details of both cases.

Summary of Case Studies

Stryker

Across the Army, there are a tremendous number of changes at the occupational and grade level. However, most of these changes are very small in number and have no practical effect. The Stryker case had the potential for significant problems, but the Army managed the process of change outside its normal processes to mitigate problems.

In the late 1990s, the Army recognized that its heavy forces were too heavy for rapid deployment and its light forces lacked staying power. The Army Chief of Staff at the time decided to provide the needed capability with a wheeled armored vehicle and to establish and test operational concepts in brigade-sized units at Ft. Lewis, Washington. The initial Brigade Combat Team was established at there in May 2000.

NORTHCOM

After 9/11, a new Unified Command Plan (UCP) was developed that included the stand-up of NORTHCOM. The billets and manning of NORTHCOM were to come from several sources in order to meet NORTHCOM's initial and full operational capabilities (IOC and FOC). NORTHCOM's IOC was established as October 1, 2002; its FOC was to be one year later, October 1, 2003.

The resourcing of the personnel needed to meet NORTHCOM's IOC and FOC would come from both a previous effort on headquarters staffing reduction, as well as a dedicated effort led by the Joint Staff (J-8), with participation of the OSD, services, agencies, and combatant commanders.

While the personnel system has the ability to deal with small changes in manpower authorizations, sudden large changes or realignments that result in additions or reductions in manpower across service, agency, and combatant commander organizations require special attention, and in the NORTHCOM case, the change involved much participation and scrutiny by all stakeholders. The result of the process was that some commands lost manpower authorizations and other commands gained them.

Stryker Case Study

The Stryker case study examined the process that was followed to reprogram existing manpower requirements and resource new manpower requirements as an example of the DoD organizational response in meeting new manpower requirements. The case study answers the question, What actions were taken at a particular point in time to resource manpower challenges? The analysis assisted the understanding of how new requirements occur and identified a method that may be useful in addressing future manpower alignment challenges.

Our plan was to use a case study to evaluate instances in which a known misalignment occurred. The emphasis was on understanding how the misalignment occurred, as well as how the misalignment was adjudicated. The analysis examined the flow of activity from conception, to organization design and structure, to allocation of resources against that structure, and to distribution of personnel to the resourced positions. This case study serves as a means of illustrating relationships among the systems that manage spaces, faces, and dollars.

The Stryker brigade combat team was designed as a medium-weight force capable of landing in an area of operations between initial entry of light infantry and later entry of heavier armor. At the time it was designed, it was considered a prototype for what are now brigade combat teams. We used the data to show the number of personnel and skills needed before, during, and after transformation into a Stryker brigade. A thorough analysis of the manpower data in the case of the first Stryker brigade did *not* reveal a fundamental misalignment in personnel systems. It appears that the Army was able to modify equipment, organizational principles, and training by using and reshuffling manpower in its already existing units.

This section describes our analysis of the manpower flows into and out of the first Stryker brigade combat team, the 3rd Brigade of the 2nd Infantry Division (3/2) at Fort Lewis, Washington, from 1998 until 2005. Our analysis focused on the years 1999 to 2003, during which

the brigade combat team concept was enunciated, and the 3/2 was converted and certified into the first Stryker brigade combat team and then quickly deployed to support Operation Iraqi Freedom.

A short timeline of the 3/2 is an aid to understanding what was being transformed over this short period. In April 1995, the 3/2 was reactivated at Ft. Lewis, Washington; at that time it comprised traditional infantry, armor, and field artillery units. In October 1999, the brigade combat team concept was proposed. By May 2000, the 3/2 fielded its first new digital equipment. It continued to activate new equipment and deactivate traditional equipment until the operational test and evaluation in May 2003.[1] Certification came in September 2003, and the 3/2 deployed to Operation Iraqi Freedom in November of 2003.[2]

Data

Annual authorizations and inventory figures for all Army units were taken from the FORMIS database, which is maintained by the Defense Manpower Data Center. Authorizations are the number of positions funded, or authorized; inventory is the number of people filling positions, or assigned. These data were categorized by military grade and branch for the years 1998 to 2005.[3] Our primary focus was 1999 to 2003, the period in which the vast majority of adaptations occurred, but other changes occurred later. We used end-of-fiscal-year authorizations and inventory for all soldiers in the 14 unit identification codes (UICs) that composed the brigade over the 1998–2005 period.[4]

How Stryker Brigade IOC Manpower Requirements Were Resourced

Table 5.1 shows the number of personnel authorized and the number of personnel assigned in the 3/2 from the end of FY 1998 to the end of FY 2005. There were three categories for the units in the 3/2: those that were *stood-up*, those that *transformed*, and those that *stood-down* (bottom section). The table shows the numbers by UICs and types of units.

In the transformation from armor-based and light-infantry-based teams to medium-weight-vehicle-based teams, the brigade's structure was, superficially at least, completely reorganized. In 2000, many personnel were assigned to units with no authorizations—personnel were being shifted into units just being stood-up and from units standing-down. What was not evident in the data set but was evident from a literature search was that the units standing-down were actually being stood-up under a different banner.[5] They remained in the same

[1]   Scott R. Gourley, "Army Transformation Returns to Louisiana," *ARMY Magazine*, August 2003.

[2]   Stryker Brigade Combat Team, "Brigade History," n.d.

[3]   The 3/2 is an active-duty unit. No effort was put into analyzing changes in reserve component manpower.

[4]   The end of the fiscal year is September 30. The UIC is a unique six-digit alphanumeric identifier.

[5]   See "Scenes from the Activation and Change of Command Ceremony for 2nd Squadron, 14th Cavalry held on Watkins Field at Fort Lewis, WA, on 16 May 2002." The scenes show the 1st Battalion, 33rd Armor becoming the 2nd Squadron, 14th Cavalry.

Table 5.1
Authorizations and Inventory in Units of the 3rd Brigade, 2nd Infantry, FY 1998–2005

UIC	Unit	3rd Brigade, 2nd Infantry: Number Assigned / Number Authorized							
		1998	1999	2000	2001	2002	2003	2004	2005
WBWFAA	209 Military Intel			65 / 0	83 / 71	80 / 71	76 / 67	68 / 67	77 / 67
WE0VAA	18 Engineering			190 / 0	116 / 118	114 / 119	120 / 120	119 / 120	132 / 120
WG02AA	334th Signal			40 / 0	87 / 79	97 / 74	78 / 74	83 / 74	66 / 74
WJHHAA	2-3 Infantry				642 / 665	695 / 665	723 / 693	717 / 696	681 / 696
WFTQAA	C-52 Antitank			145 / 53	53 / 51	60 / 51	53 / 53	52 / 54	52 / 54
WJHJAA	1-14 Cavalry			437 / 491	444 / 409	439 / 408	453 / 437	495 / 438	422 / 438
WAJKAA	5-20 Infantry	590 / 566	560 / 566	655 / 728	619 / 665	692 / 665	731 / 693	719 / 696	681 / 696
WARNAA	1-23 Infantry	788 / 759	703 / 759	746 / 728	609 / 665	720 / 665	722 / 693	704 / 696	662 / 696
WE4QAA	296 Fwd Support	479 / 428	450 / 349	460 / 0	406 / 380	397 / 379	440 / 391	663 / 608	629 / 608
WJFJAA	1-37 Field Artillery	584 / 623	537 / 623	407 / 277	278 / 285	290 / 285	315 / 290	322 / 291	295 / 291
WAH9AA	HHC[a]	111 / 81	127 / 81	167 / 133	125 / 119	137 / 116	168 / 121	359 / 124	160 / 124
WC01AA	1-32 Armor	608 / 608	599 / 608	14 / 0					
WH1KAA	1-33 Armor	597 / 608	574 / 608	613 / 608	472 / 494				
WA00AA	168 Engineering	416 / 444	354 / 417	34 / 0					

NOTE: Top section of table shows units stood-up; middle section shows units transformed; bottom shows units stood-down.

[a] Headquarters and Headquarters Company.

facilities and could maintain the same personnel as they changed equipment and mission (i.e., there was usually more than just a name change).[6]

Changes in the Number and Type of Personnel

The number, type, and skill mix of soldiers changed over time, as these organizations changed. Unfortunately, because we were unable to track individuals in this data set, there was no way to determine where soldiers went from units that were stood-down and where soldiers came from for units that were stood-up. We were able, however, to see the grade structure and skill mix of the soldiers. We also were unable to identify how quickly or abruptly changes occurred in any given year. Our data did not indicate whether changes took place at one point between the two reported dates or gradually and slowly during that year.

Figure 5.1 compares the number of authorized and assigned personnel in 3/2. Over the period, the number of authorized personnel averaged 3,751, whereas the number of assigned personnel averaged 3,968. In a number of years, the number of soldiers assigned exceeded

Figure 5.1
Authorized and Assigned Personnel in 3rd Brigade, 2nd Infantry, FY 1998–2005
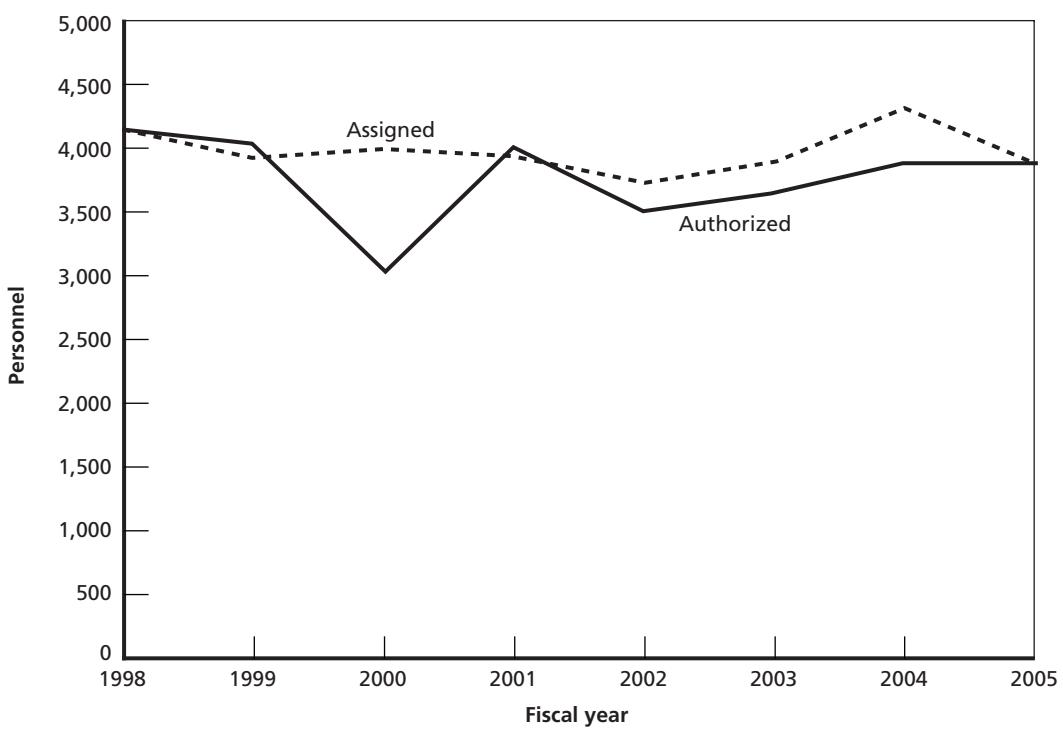
RAND *TR419-5.1*

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[6]   Earlier we stated that we would not be examining the fit of the manpower, resources, and personnel subsystems with other systems. It is worth noting, however, that in the Stryker case, equipment fielding and unit training took longer than the responsiveness of the personnel system did. All of these systems have to be aligned to provide operational units to meet mission needs.

authorizations, most notably at the end of FY 2000, when 1,000 more soldiers than were authorized were in the units, fundamentally because of the stand-down of 1-32 Armor and reshuffling in 296 Forward Support. But the number of personnel in the 3/2 remained remarkably constant from year to year, changing no more than 10 percent annually.

Figure 5.2 shows the number of enlisted personnel in 3/2. That number dropped from roughly 3,865 in 1998 to 3,588 in 1999—before transformation. But from 2000 to 2003, the overall number of enlisted fluctuated, going from 3,652 down to 3,338 and back up to 3,517. Trends are more noticeable for the share of personnel within grade bands. While the share of E7s–E9s stayed roughly constant at around 6.5 percent, the share of E4s–E6s increased from 59 percent in 1999 to 67 percent in 2003, with a corresponding decrease for E1s–E3s. Until 2005, when these trends completely reversed, the Stryker brigade combat team seemed to use a more experienced and skilled enlisted force.

In contrast with enlisted personnel, officers increased in number after 1999, though not steadily (see Figure 5.3). Although the small number and large year-to-year variability in the number of officers at each grade level can mask overall trends, the data show that the ranks of O1s and O2s decreased slightly after 1999, but that from 1999 to 2003, the number of O3s rose from 81 to 148, the number of O4s rose from 26 to 33, and the number of O5s and O6s

Figure 5.2
Enlisted Personnel Assigned to 3rd Brigade, 2nd Infantry, FY 1998–2005
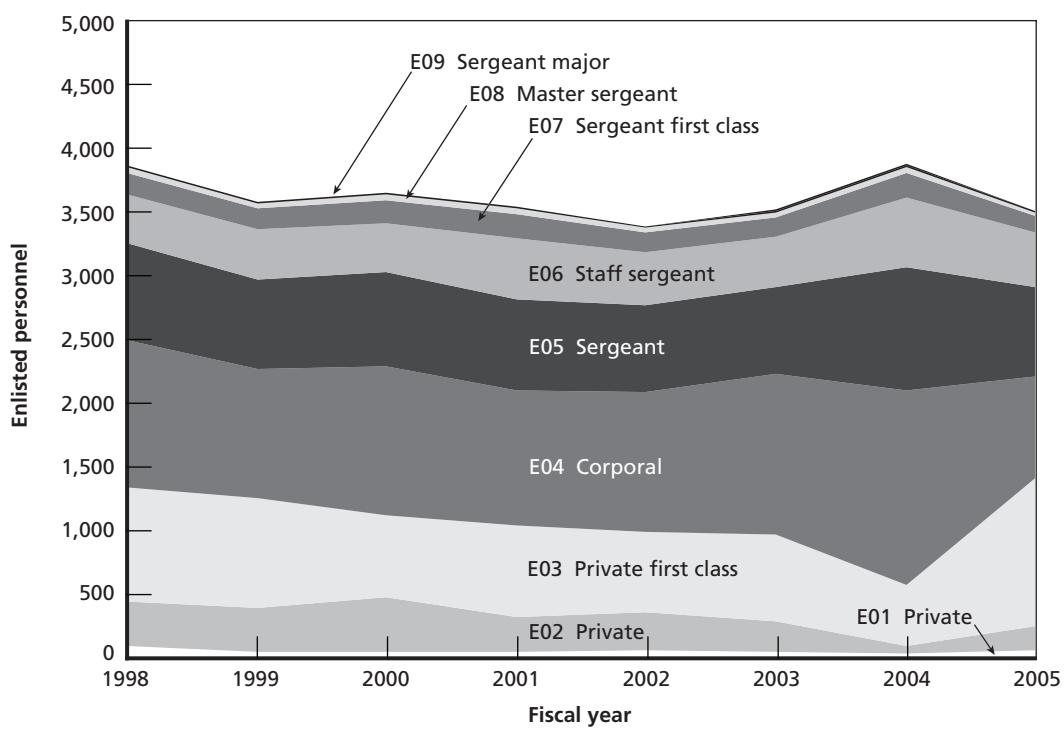
Figure 5.3
Officers Assigned to the 3rd Brigade, 2nd Infantry, FY 1998–2005
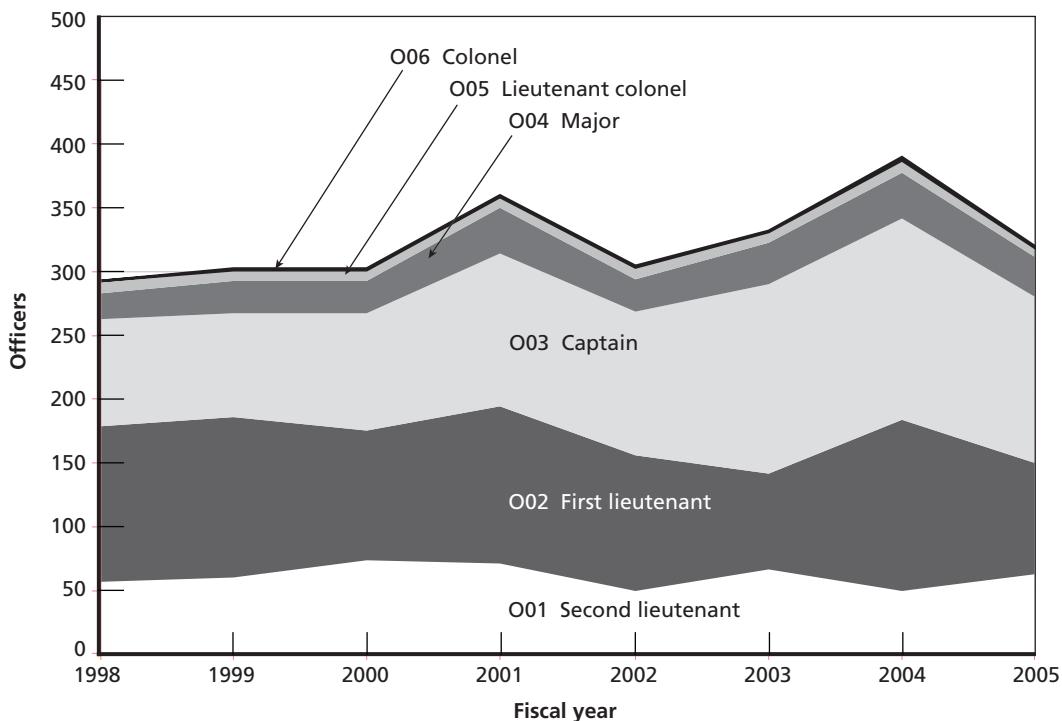
remained constant.[7] In addition, though not shown, the number of warrant officers more than doubled from 1999 to 2003, going from 14 to 31.

In terms of skill mix, the most interesting results are from our analysis of branches (see Table 5.2). As one would expect from a move away from tracked vehicles, the number of enlisted infantry increased from 1999 to 2003, going from 984 to 1,656, while the number of enlisted armor decreased, going from 636 to 281. The decrease in mechanical maintenance personnel from 500 to fewer than 200 demonstrates the extent to which maintenance was being performed by contractors.[8] The decrease in enlisted supply and services personnel was caused by an intentional shift in supply capability within the Stryker brigade, since the brigade has a reduced organic capability of retrieving its own supplies and relies more heavily on other units for delivery of supplies. In addition, the much higher number of enlisted and officer

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[7]   This does not imply that the same individuals remained in command, however: "Immediately before deploying, almost every single senior officer in the brigade was rotated out—within 60 days of its departure" (Jeff Charleston, "The Evolution of the Stryker Brigade—From Doctrine to Battlefield Operations in Iraq," John J. McGrath, ed., *An Army at War: Change in the Midst of Conflict*, Proceedings of the Combat Studies Institute 2005 Military History Symposium, August 2005, p. 47). The FORMIS data set cannot be used to confirm this.

[8]   GAO, *Army Stryker Brigades: Assessment of External Logistics Support Should Be Documented for the Congressionally Mandated Review of the Army's Operational Evaluation Plan*, Letter to Secretary of Defense (re: GAO-02-442), GAO-03-484R, 2003, p. 4.

Table 5.2
Number of Assigned Personnel, by Branch for Selected Branches

Branch	Number of Personnel Assigned					
	1998	1999	2000	2001	2002	2003
E11 Infantry	984	984	1,209	1,646	1,620	1,656
E19 Armor	636	636	597	519	281	281
E31 Signal Operations	97	97	82	133	114	116
E63 Mechanical Maintenance	555	497	78	202	139	139
E92 Supply and Services	317	306	104	143	108	113
E96 Military Intelligence	16	16	104	159	158	157
O35 Military Intelligence	11	11	15	23	22	22

intelligence personnel indicates the relative importance of network-centric operations to the brigade's mission. Our literature review identified some skills that have proven important for combat success in the Stryker brigade but that were not identifiable in the dataset we used, most notably marksmanship skills.[9]

Stryker Conclusions

The initiation of the Stryker brigade was a sequence of smaller events over several years, from 1999 to 2003. New equipment flowed incrementally into the brigade, although training of personnel started on equipment surrogates. Many of those trained would be rotated out, and new personnel were rotated in, requiring a continuous regimen of training.

The already existing units of the 3/2 were reorganized and/or transformed to meet the demands of both the organizational principles and the weapon systems of the new mission tasks. Within each branch, these changes were on the order of, at most, several hundred people over several years. None of these—the increased number of infantry and decreased number of armor personnel, the small increases in the average experience level of personnel, and the changes in organic maintenance and supply capabilities—is evidence of misaligned systems. In fact, they appear to show an adaptive system that was able to meet the changing demands put upon it.

The FORMIS data do not provide evidence of a misalignment between manpower and other systems during the stand-up of the first Stryker brigade. This does not mean there were no difficulties in manpower sourcing for initiation of the brigade, or that training on equipment still being developed and produced was as straightforward as training on equipment at hand. What it does mean is that the timeline, though compact, was not a singular event that the manpower, resources, and personnel systems were unable to handle.

NORTHCOM Case Study

The NORTHCOM case study, which examined the process followed to reprogram and resource new manpower requirements, serves as an example of the DoD organizational response in

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[9] Charleston (2005, p. 52) states: "The brigade makes extremely heavy use of snipers and highly skilled marksmen. There is a sniper section in each battalion and a sniper team in each company."

meeting new manpower requirements. It answers the question, "What actions were taken at a particular point in time to resource manpower challenges?"[10] Our analysis helps in understanding how new requirements occurred and identifies a method that may be useful in addressing future manpower alignment challenges.

We used this case study to evaluate an instance in which a misalignment was presumed to have occurred. Our emphasis was on understanding how the misalignment occurred and how it was adjudicated. We examined the flow of activity from conception, to organization design and structure, to allocation of resources against that structure, and to distribution of personnel to the resourced positions.

This case study illustrates relationships among the systems that manage spaces, faces, and dollars. We begin by documenting the initial efforts that had to be filled for IOC; we then explain the process for resourcing FOC.

New and Changed Missions Required a Reallocation of Manpower
The 2002 UCP established NORTHCOM; it also directed the merging of the U.S. Space Command (SPACECOM) and the U.S. Strategic Command (STRATCOM), as well as other changes in the missions and responsibilities of U.S. unified combatant commands (UCCs). Some missions were new, but others were transferred from one UCC to another. For those missions that were transferred, the manpower associated with them also had to be transferred.

The manpower needed to support the stand-up of NORTHCOM had to be identified and detailed to support a phased increase in capability from an IOC to an FOC. In addition, other new missions needed manpower for their execution. The combined effect of newly created missions, mission transfers, and NORTHCOM's stand-up led to an increased demand for manpower.

Table 5.3 identifies the UCP manpower shortfalls. To meet these shortfalls, the Joint Staff convened a Joint Military Manpower Conference to address how the manpower requirements would be resourced. The IOC date for NORTHCOM was determined to be October 1, 2002, with FOC to be established October 1, 2003. Two hundred manpower billets were identified as necessary to support NORTHCOM's IOC and stand-up.

The manpower resourcing for NORTHCOM's IOC was achieved by reprogramming the manpower savings that had been achieved through a recent headquarters-reduction initiative: The manpower savings (or reductions) from Major Headquarters Activities (MHA) were applied to NORTHCOM's IOC requirements. Both the timing for and the identification of manpower to support NORTHCOM's IOC benefited from this MHA reduction process. The process for resourcing additional manpower to meet NORTHCOM's FOC was more challenging, however. The stand-up of NORTHCOM was a unique occurrence guided by a unique process.

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[10]   Resource management operations, as described in Joint Publication 1-02 (Joint Staff, 2001), are the execution of the resource management mission, which includes providing advice and guidance to the commander, developing command resource requirements, identifying sources of funding, determining cost, acquiring funds, distributing and controlling funds, tracking costs and obligations, developing cost capturing and reimbursement procedures, and establishing a management control process.

Table 5.3
2002 Unified Command Plan Manpower Shortfalls

Command	Military	Civilian	Total
U.S. Joint Forces Command (JFCOM)	176	249	425
U.S. Northern Command (NORTHCOM)	529[a]	169	698
U.S. Strategic Command (STRATCOM)	109	74	183
Joint Task Force Guantanamo (JTF GTMO) (U.S. Southern Command [SOUTHCOM])	147	0	147
TOTAL	961	492	1,453

SOURCE: Joint Staff briefing, Joint Military Manpower Conference, February 27, 2003.

[a] Number includes 83 members of the active guard reserve/Navy active reserve (AGR/TAR).

Challenges in Resourcing the New Manpower Requirements

Joint Staff officials stated that one of the challenges to resourcing the new manpower requirements was that NORTHCOM was to be stood-up at a time when the services were already stretched thin in terms of manpower. Other challenges in resourcing NORTHCOM were that

- It was a new organization with different manpower requirements. NORTHCOM was a new UCC with a commensurately large number of authorizations that must be resourced.
- There were many different stakeholders in the process, including unified combatant commanders, the services, and defense agencies. These stakeholders were charged with justifying their organizational structure for their mission.
- NORTHCOM's stand-up occurred when the stakeholders were engaged in the Global War on Terror (GWOT).
- Governing guidance or directives for resourcing an organization of this size and scope were lacking.
- The timeline for reaching FOC was short.

How NORTHCOM's IOC Manpower Requirements Were Resourced

Prior to 9/11, the Joint Staff and combatant commands had identified manpower spaces as part of a mandated 15 percent management headquarters reduction directed by Congress. The FY 2000 National Defense Authorization Act (NDAA) directed that, effective October 1, 2002, the number of MHA personnel in the DoD could not exceed 85 percent of those personnel on October 1, 1999. MHAs are those headquarters (and the direct support integral to their operation) whose primary mission is to manage or command the programs and operations of DoD, the DoD components, and the major military units, organizations, or agencies. MHAs include management headquarters, combatant command headquarters, and direct support.[11]

Congress thought that the number of personnel in uniform had been dramatically reduced in the 1990s, but that the number of personnel assigned to MHAs was still too high.

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[11] The specific elements of DoD that are MHAs are identified in "Major Department of Defense Headquarters Activities," DoD Directive 5100.73, May 13, 1999.

The overarching purposes of reducing the number of MHA personnel were to free resources (manpower) and reassign them to field and fleet activities to meet operational needs, and to create a leaner, more flexible department.

These manpower savings were originally to be used to resource manpower needed for the standing joint forces headquarters (SJFHQ). However, after 9/11 and the subsequent decision to stand-up NORTHCOM, the Secretary of Defense approved the application of the first 200 positions identified from the MHA reductions to NORTHCOM to support its IOC.

Joint Staff officials indicated that a memorandum from the Chairman of the Joint Chiefs of Staff (CJCS) to the Defense secretary had requested that the 200 authorizations be used to source the NORTHCOM IOC. The Joint Staff, J-1,[12] defined and requested that a fair share of these authorizations be apportioned both from within the Joint Staff and from the unified commands, based on Director of the Joint Staff guidance. The directing memorandum was forwarded to the Joint Staff and unified commands on March 29, 2002, in support of meeting NORTHCOM's IOC by October 2002. The billets needed to support NORTHCOM's IOC were identified by NORTHCOM on a spreadsheet by grade, category (officer, enlisted, and civilian), and by service.

The Joint Staff, J-1, officials indicated that the J-1 had no role in determining the manpower authorizations that NORTHCOM needed. While a Joint Table of Distribution[13] did not initially exist for NORTHCOM, all DoD activities that were involved in the process of filling manpower authorizations used the NORTHCOM spreadsheet described above as the requirements document. The Joint Staff and UCCs then provided manpower change requests to delete billets in UCCs and add billets in NORTHCOM. Joint Staff officials indicated that grade and military specialties of personnel assigned to fill the authorizations were not a critical factor for initially establishing an IOC. By July 2002, billets were off the Joint Staff and UCC books and on the NORTHCOM books. NORTHCOM had been aware that this was happening and had begun to work its spreadsheet for assignments. The services had the NORTHCOM spreadsheet and were trying to help ahead of time.

Joint Staff officials have indicated that the comptroller should have provided direction for the changes through a program budget decision (PBD). An individual comptroller chose not to take this route, leaving a very limited paper trail for the changes that occurred in meeting the manpower for NORTHCOM's IOC. Instead, the comptroller decided to enter the changes in the Comptroller Information System (CIS);[14] they were made to the FYDP based on the NORTHCOM spreadsheet. Joint Staff officials indicated that while this process worked for

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[12] The staff of the Chairman of the Joint Chiefs of Staff ("the Joint Staff") is functionally organized. The J-1, a one-star general or admiral, is responsible for manpower and personnel. The J-8, a three-star general or admiral, is charged with developing force structure requirements; conducting studies, analyses, and assessments; and evaluating military forces, plans, programs, and strategies.

[13] According to Joint Publication 1-02 (Joint Staff, 2001), a Joint Table of Distribution (JTD) is a manpower document that (a) identifies the positions and enumerates the spaces that have been approved for each organizational element of a joint activity for a specific fiscal year (authorization year), and (b) enumerates those spaces that have been accepted for planning and programming purposes for the four subsequent fiscal years (program years).

[14] CIS tracks all FYDP manpower authorization information. Every authorization has a program element code (PEC) assigned to it, so the database can be sorted by service, and other identifiers.

the military personnel, it was very problematic for civilian personnel because funding needed to transfer (from the losing to the gaining activity) for the civilian authorizations. As a result, the NORTHCOM civilian authorizations were not as easy to resource as the military authorizations had been. Since funding cannot be moved for civilian authorizations without a PBD, NORTHCOM did not initially receive the civilians it needed.[15]

How NORTHCOM's IOC Was Met

NORTHCOM wanted the needed personnel immediately, and the services had the challenge of providing them, which they managed to do in advance of the IOC date. The services filled on average about 90 percent of the needed spaces. Joint Staff officials noted that part of the challenge in immediately staffing NORTHCOM stemmed from the services' assignment cycles. Whereas the Army has an 18-month assignment cycle,[16] the Air Force has a nine-month cycle, so the stand-up of a new command resulted in out-of-cycle fills. Personnel not due to be transferred from their current assignments were transferred early (out of cycle) to NORTHCOM. The 200 personnel needed to provide NORTHCOM with an IOC arrived in time because the services altered their assignment cycles to meet NORTHCOM's operational capability dates.

A New Process Was Needed to Resource NORTHCOM's FOC

Although the needed manpower for NORTHCOM's IOC was allocated, additional authorizations and personnel were needed to attain FOC. In addition, authorizations to support mission requirements for JFCOM and STRATCOM were needed. The primary challenge for manpower planners was that the manpower authorizations to be resourced or reallocated had to come from within DoD's existing organizational structures, and there was no formal procedure for determining how realignment should occur.

The Joint Manpower Program (JMP) manual of procedures outlines the process for determining and validating joint manpower requirements in establishing an organization's structure.[17] It also offers guidance on resourcing new joint manpower requests from existing joint manpower: "Several methods can be used . . . to recommend resourcing candidates. For example, the manpower functional analysis baseline data can be used to help determine which organizations should provide resources; or a macro fair share reduction can be levied with billet level details provided by the targeted activity."[18] While JMP guidance provides general options for the reallocation of manpower, it is directed at those wanting to make a small number of additions or deletions to the JTD. The joint manpower demands in support of UCP 2002 were

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[15]   Joint Staff J-1 officials noted that an FY 2005 PBD provided a memorandum of agreement to move civilians to the Air Force (as executive agent) for NORTHCOM.

[16]   An assignment cycle is the time it takes to fill a manpower authorization (space) with a service member (face). It entails identifying a position that must be filled, matching a service member with the appropriate skills to the position, liaising with the command and individual, writing orders, and getting the new service member in place at the new command.

[17]   Joint Staff, *Joint Manpower Program Procedures*, Chairman Joint Chiefs of Staff Manual (CJCSM) 1600.01, 30 April 1998.

[18]   Joint Staff, 1998, p. F-3.

much larger, and the resourcing process followed a reallocation process that differed from the JMP options.

J-8 Led the Process to Resource NORTHCOM FOC

J-8 involvement in realigning authorizations to support NORTHCOM stemmed from a January 2003 commander's conference. Discussions with Joint Staff officials indicated that there was little or no control of the resourcing or manpower reallocation process below the Secretary of Defense. J-8 was assigned to address the UCP 2002 manpower resourcing challenges and arrive at a solution. The objective of the manpower conference was "to build viable options to address the joint manpower needs of USSTRATCOM, USJFCOM, USNORTHCOM and JTF GTMO through a collaborative process involving the Services, the Combatant Commands, the major Defense Agencies and the Joint Staff."[19] Options for meeting the military manpower needs of the identified activities were to be presented to the Joint Chiefs of Staff and the UCCs.

Joint Staff officials perceived that the resourcing process was stalling because the J-1, a one-star, did not have the rank needed to bring the stakeholders (UCCs, services, and defense agencies) together to reapportion the authorizations for the UCP 2002 manpower requirements. They indicated that the J-8, as a three-star, had not only the rank needed to leverage the stakeholders to arrive at a solution, but also the credibility and resources to analyze the challenge, develop an approach, and arrive at an equitable solution.

J-8 officials we interviewed stated that they approached the requirement for filling manpower authorizations for UCP 2002 (to include NORTHCOM) from a resourcing perspective. In essence, their approach was to fix (or assess) priorities and then reallocate authorizations according to those priorities. They began by determining what manpower NORTHCOM needed and when NORTHCOM needed it. Their charge was to take a focused, analytic approach and remain neutral analysts and facilitators. J-8 had an existing analytic contract supporting an evaluation of combat support agencies, and in-house personnel available to work on the project were well versed in operations and statistical analysis. J-8 had a wide variety of experience on the staff, as well as the elements and resources to effect a solution.

J-8 officials sought to meet NORTHCOM's FOC date. They also had to consider the needs of STRATCOM and JFCOM, both of which had new manpower requirements as a result of added missions.

J-8 officials indicated that there was some discussion of keeping SPACECOM's manpower in place and just changing the doorplates from "SPACECOM" to "NORTHCOM," since NORTHCOM would take over SPACECOM's geographic offices. Although some of the skills and the billet structure at SPACECOM were similar to those at NORTHCOM, personnel were not transferred over from SPACECOM. The resident skills and expertise needed for SPACECOM missions differed from those needed to perform NORTHCOM's missions, so new personnel and skill sets were essential.

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[19] From the opening-remarks briefing at the Joint Military Manpower Conference, February 27, 2003.

Guiding Principles in Resourcing NORTHCOM

The unfunded manpower requirements to resource NORTHCOM's FOC were met through the collaboration of the services, combatant commanders, defense agencies, and others. Joint Staff officials indicated that the billets needed to meet NORTHCOM's FOC were to come from within joint activities and would include the conversion of some billets from military to civilian positions. The assumptions that guided this reallocation process were as follows:

- There would be no increase in military end strength.
- NORTHCOM's and STRATCOM's FOC dates must be met.
- Service contributions to joint military manpower growth should be minimized.
- Opportunities to reduce non-military-essential billets existed.
- Organizational realignment and efficiencies offered sourcing opportunities.
- UCC requests were valid.

Overall Approach Used in NORTHCOM Resourcing Process

The J-8 approach followed a political process: How do we get all of the stakeholders together and achieve consensus on how to redistribute the personnel to NORTHCOM, STRATCOM, and JFCOM?

J-8 hosted a Joint Manpower Conference that was attended by all stakeholders (manpower claimants): the Office of the Secretary of Defense (OSD), the Joint Staff, the services, the UCCs, and the defense agencies. Prior to the conference, the J-8 officials requested manpower authorization data from the UCCs, services, and defense agencies. All manpower claimants had to identify the officer, enlisted, and civilian authorizations at their respective commands.

J-8 representatives analyzed the data and set up a system of comparative analysis across commands and functions. The purpose of the data analysis was to put all commands on an equal footing by evaluating similar organizations and functions and comparing the manpower authorizations assigned to perform those functions.

There was a requirement that decisionmakers (one-star level or deputy) from each command attend the conference. Each attendee had to brief and justify his or her organizational structure and manpower assignment. The data analysis pointed out organizations whose authorization numbers were outliers with respect to those of the other current structures. It also revealed differences in the number of manpower authorizations assigned to similar organizations and directorates. NORTHCOM, STRATCOM, and JFCOM representatives then briefed their respective manpower structures/proposed structures to support their new missions.

All structures were also reviewed in terms of their civilian-to-military mix. It was found that continental United States (CONUS) organizations had a higher mix of civilians to military than did non-CONUS organizations. Additionally, the NORTHCOM request had a high proportion of military personnel.

After all stakeholders briefed the others on their organizations, the J-8 officials divided the attendees into working groups, each headed by a one-star. Each working group was tasked to develop three courses of action for reapportioning authorizations to support NORTH-COM, JFCOM, and STRATCOM. The working groups arrived at different courses of action;

attendees then voted on their preferences among the courses of action (COAs) offered by the different groups.

Where Did the Redistributed Authorizations Come From?

During the process, some missions in the services/UCCs and agencies were found to overlap. The J-8 lead officer gave as an example the Navy Cruise Missile Commands for the east and west coasts; he also provided the resulting reconsolidation.

At the end of the conference, stakeholders either did or did not concur with the identified COAs. Stakeholders who had been present during the manpower conference backbriefed their superiors on the outcomes of the participants' deliberations and votes. The representatives most adversely affected by the selected COAs brought challenges that needed to be addressed. Joint Staff officials indicated that these challenges were reconciled. The J-8 briefed the operations deputies on the COAs that the working group had developed. The process ended with the Secretary of Defense signing the implementation plan developed during the conference, and all billets were redistributed.

While the details of the Joint Military Manpower Conference were not widely disclosed, the reprogramming/redistribution of manpower billets was announced through PBD 706,[20] which quantified the results of the conference. Joint Staff officials indicated that the Defense Finance and Accounting Service (DFAS) took a large percentage of the military manpower reductions.

Several needs emerged from the conference discussion. For example, the number of civilian full-time equivalents (FTEs) needed to be increased to support the stand-up of NORTHCOM. Although the initial assumption stated at the conference was that there would be no increases, sufficient justification was presented to ultimately achieve an approval for an increased number of FTEs. Another need that emerged was that of bridging the gap in achieving NORTHCOM's operational capability. Reservists were used to bridge this gap, and some reservists were brought in for approximately one-year assignments.

Relevant Lessons

DoD and Joint Staff guidance/procedures address only small, incremental additions and deletions and zero-based (no-growth) changes in JMP processes. Directives and methodology to follow for large-scale additions or realignments such as the stand-up of NORTHCOM are lacking. Wartime conditions (post-9/11) added to the need to make the process work. J-8 approached the analysis and study from a resourcing perspective. The J-8 lead officer stated that the entire process served to diffuse challenges of unfairness by offering all stakeholders equal involvement and representation. All attendees had an opportunity to be involved because part of the political process was to vent command positions. The objective analysis of organization structures and the involvement of stakeholders produced various COAs.

Joint Staff officials who headed the manpower conference and resourcing study indicated that the results of the research effort led them to think there were more efficiencies to be

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[20] Joint Chiefs of Staff, "Budget Change Proposals (BCPS)—Combatant Commands," Program Budget Decision 706, December 5, 2003.

gained. The Joint Staff representative pointed to perceived excesses of personnel (manpower authorizations) in targeting and analysis, as well as in signals analysis. The representative also indicated that some organizations appeared to be allowed to increase their manpower authorizations without justification. And during the process, he noted that unified commanders were not willing to relinquish any of their authorizations. Overall, the case illustrates that when organizations and systems cannot share information in a timely and appropriate manner, they can be taken off line for ad hoc interventions to force alignment.

NORTHCOM Conclusions

Joint Staff officials were of the opinion that the NORTHCOM stand-up was a once-in-a-lifetime occurrence. There was no planning or programming for it, and initially there was no control of the resourcing process below the Office of the Secretary of Defense. J-8 took the lead from a resourcing perspective and defined the challenges and boundaries, established a data-based methodology, gathered the stakeholders in a collaborative process, and allowed those stakeholders to vet their concerns and justify their organizations' structures. The process produced a comprehensive evaluation of the options and led to the development of the COAs to be pursued. The chosen COAs were then briefed to senior service representatives, and decisions were made to allocate manpower to meet NORTHCOM's FOC date and the JFCOM/STRATCOM requirements.

Overall, the approach was a collaborative process that sought to obtain buy-in from the stakeholders by allowing them to air their views and defend their organizations' structures. The positions that needed to be filled were well defined. The process had the support of senior leadership, it occurred at a time of need (post-9/11), and the product of the process was to be used to effect change to meet needed manpower demands post-9/11.

The success of this resourcing effort could be attributed to the fact that the situation was unique. The fear and threat of war created a sense of urgency and the need to make things work. This is not to say that the process used could not be duplicated in the future. Indeed, it is important to document a method successful at effecting change so that it can be used in the future.

Observations from the Case Studies

Based on our examination of the Stryker and NORTHCOM cases, we could not conclude that systemic links were lacking among the manpower, resources, and personnel systems. Both cases illustrate that organizational and system interoperability existed, even though the alignment was brought about by ad hoc means employed because of the time sensitivity of the two situations. In both cases, the driving factors were the needs of national defense missions, and the manpower, resources, and personnel systems adjusted to meet those needs. The purposes of the larger system were met even though the subsystem means were stretched.

Conclusions

This chapter presents our conclusions, which are based on literature reviews, interviews, discussions with subject matter experts, data reviews, and our two case studies. We start by answering three questions related to alignment, then providing our overall conclusions.

Is the System Meeting Stable Year-to-Year Requirements Consistently?

Stable does not mean "no change," and *turbulence* does not mean "misaligned." We observed instances of significant change among the manpower, resources, and personnel systems, but either these changes appeared to be frictional and dissipated over time or action was taken to synchronize the systems. It is known that there are long-standing problems with filling certain occupations and grades, but this does not mean that the organizations and systems are unable to share information. We could not conclude that there were systemic misalignments.

DoD's own program assessment confirms our assessment:

> DoD is transforming its personnel structure to adapt to the dynamic changes in the world and in warfighting. These changes require DoD to have planning and management tools that can respond to what is now a fluid environment. DoD currently tracks each skill to ensure that a sufficient number of personnel are available for each field and tracks the overall numbers and retention to ensure that critical billets are filled. The general overall measure for all services, personnel readiness, is as high as it has ever been.[1]

Can the System Meet Rapidly Changing Requirements Reasonably?

The Stryker brigade and NORTHCOM case studies presented two different situations involving significant change. In both cases, the system aligned after ad hoc efforts were made. The overall mission was achieved in both cases, which means the critical criterion was met.

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[1] U.S. Government, "Program Assessment: Military Force Management Program," Assessment Details, Funding, and Improvement Plan, Section 2.2, 2005.

What Factors Are Limiting Effectiveness and Efficiency?

The driving variable in whether a change is or is not disruptive appears to be time. Last-minute changes appear chaotic in an overall system designed for regularity; given enough time, however, the systems seem to be able to align. One interviewee suggested that the Army uses a rule-of-thumb of two years from documentation of manpower authorization to boots on the ground while the Air Force uses two and one-quarter years. Only in cases where insufficient time is provided to achieve an authorization change do misalignments occur, and a rapidly changing mission is one of those cases. Introducing time as a variable can lead to short-term misalignments that must be overcome through adaptability within each component system. Of the three systems we evaluated—manpower, resources, and personnel—the personnel system is the least adaptable, because of its closed nature and the inflexible-in-the-short-term legislated provisions for its military workforces.

The nature of the change may affect the extent of the misalignment. For example, a new weapon system, a reorganization, a new policy or law, a new doctrine, a new force structure, a change in end strength, or a new mission—all of these may have different effects or very similar effects, depending on lead time.

The larger the personnel inventory is, the smaller the effect of changed authorizations will be. The size of the authorization change compared to the existing authorization base has an effect.

Changes that require higher skilled occupations or higher seniority have greater effects.

The amount of resources available may affect the size of the misalignment but may not be a cause of the misalignment.

The manpower, resources, and personnel systems could be analyzed to ascertain opportunities for improvement in both effectiveness and efficiency. For example, improvements within the personnel subsystems could lead to better effectiveness and efficiency. The personnel subsystems are "stovepipes" that do not always connect as well as they might. Furthermore, there are misunderstandings about the causal relationships of personnel policy variables. For example, people frequently say they want better readiness, higher retention, and lower cost—three outcomes that cannot be achieved simultaneously. The relationships of such outcomes need to be better understood and communicated to decisionmakers.

Increased flexibility could be a desired personnel system characteristic. If the system had more flexibility, the personnel system cycle time needed to meet manpower authorizations could be reduced. For example, having fewer occupations to manage and more generalists to assign to the work to be done would simplify the work of the subsystems. This would be a broadening of the manpower specification in terms of what needs to be produced. Or, the achieved variance around the specification could be reduced by applying process-improvement methods, such as Lean Six Sigma, to the personnel subsystems. Either way, a better fit would be achieved. A more precise and efficient way of providing a generalist is a useful idea that could benefit the overall manpower, resources, and personnel enterprise.

The overall enterprise needs common goals and shared incentives. The three systems should not work at cross-purposes. For example, the resources system should not be striving to reduce unit costs while the manpower system seeks greater effectiveness through the use of

higher grade and skill or more officers. Establishing common ends may be a more critical chal-
lenge than aligning means.

Constructive, or organizational, alignment is important. Executive support and shared
understanding of the business can be both an enabler and an inhibitor. The separate organiza-
tions should work toward minimizing activities that inhibit alignment and maximizing activi-
ties that bolster it, such as improving organizational relationships and mutual cooperation.[2] In
this regard, constructive interoperability may be as important as system interoperability.

The internal operability of the personnel system—its own dynamics—may be more of
a problem than changes in manpower requirements are. For example, even if the manpower
requirements were perfect, timely, and unchanged, the personnel system's dynamics could
cause problems.

An enterprise architecture or a life-cycle framework may be desirable. An evaluation
should be performed to determine whether the addition would be worthwhile, however, since
it may require a large investment and have a small payoff.

Overall Conclusions

Alignment is not about whether the component systems within a system are effective; it is
about whether those systems are effectively interoperable. In short, the manpower, resources,
and personnel systems are effectively interoperable within the overall enterprise. Overall out-
comes may line up only over decades (if at all), but three systems exchange data with a peri-
odicity of six months or less, and the periodicity can be significantly reduced by exceptional
action. There are no systemic disconnects among the manpower authorization cycles, resources
cycles, and personnel cycles that lead to misalignments. Links among the three systems exist.

Change in an organization is always disruptive, particularly in organizations that are
large and complex. Authorization changes have caused problems and friction in the past and
will continue to do so in the future, even if such changes are necessary and desirable. The
procedures in place in the military services appear to be designed both to prevent adoption of
undesirable changes and to minimize friction when change is needed. At the military-service
level, the manpower, resources, and personnel systems are better aligned than they are recog-
nized as being.

A strategic approach to alignment must begin with mission; demand based on mission is
the start point. Forces, organizations, and manpower authorizations[3] must flow from mission,
and the resources and personnel systems must adjust to manpower needs. Placing the existing
personnel inventory as the permanent driver of, or even as a dominant constraint on, man-
power authorizations would minimize the gaps between the resources and personnel systems
but would maximize the gaps between available personnel and real mission needs. Person-

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[2]   James R. Francisco, "Strategic Information Systems Alignment in the Health Care Industry," Eller College Working
Paper No. 1005-04, June 2004.

[3]   Our charter did not include looking for defects within the systems. Other reports have criticized the manpower require-
ments processes over the years. In essence, we are assuming the authorizations are "real."

nel readiness (meeting mission needs) must be based on demand. Information on personnel demand needs to enter the shared system as soon as possible; refinement can take place later. Supply organizations and systems cannot focus solely on their own internal efficiencies.

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